ADDRESSES AND ORIGINAL

THE LISTERIAN IDEA IN 1939 *

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It is no light task for me, a relative stranger, to eak of Lister in the presence of so many of you ho have known, loved and admired him, who may most be said to have received sustenance from him y by day, and through whom his work has become e common heritage of surgeons all over the world it indeed possible to say anything of him that you not already know—you who have lived in the minous atmosphere of his thought, in the wake d tradition of the great man himself, I might ll despair of being able to do so

ANTISEPSIS AND ASEPSIS

In reading Lister's papers, clear, precise, [illegible] al bright like the metal in our operating theatres, has appeared to me that, nowadays, the fullness of Listerian conception and its permanent appli- have not always been understood as they ought be. Toying with the words "antisepsis" and sepsis," many surgeons of the present day see the letter and not the spirit of Lister's doctrine y are inclined to the idea that Lister halted on threshold of Pasteur's work. His ritual would n have been only one stage, soon exceeded; his hod would then be only a momentary phase in a wing practice; and of Lister there would remain y a great name.

Such a conception would show a very imperfect wledge of his work and thought. Indeed such an neous judgment has already been corrected in place. The late Lord Moynihan put it thus "e know that the old quarrel as to the relative its of the antiseptic and the aseptic methods was eless and jejune For Lister was indubitably the ent of both. . . . Aseptic surgery is the wise ctice of antiseptic surgery There is a difference etail not in ideal or in fundamental truth"

It is true that boiling and dry heat have in great sure done away with carbolic acid, but these are antiseptic means for the attainment of asepsis objective still remains the coagulation of the tein element of a microbe Heat? Chemicals? In h there is no essential difference between them t is safer, easier to handle We have adopted it principle remains the same—the achievement of psis by antisepsis Again, it is necessary to note the most rigid partisans of asepsis by heat in faithful, in certain respects, often without ing it, to the attainment of antisepsis by ical means They disinfect the skin with ture of iodine, alcohol, or picric acid They a chemical substance to appendix stumps to the lines of intestinal section Involuntary iples of Lister, they are unable to escape from the inance of his teaching.

ur interest then today, in considering the present tion of the Listerian idea, does not consist in the pening of an old academic quarrel The question already settled. Our entire surgical practice of y is the direct outcome of Lister's research and

teaching, in t
Pasteur Lister
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for all, our prese
whether nowadays
Lister's first idea,
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made in our metho
have too much overl
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PATHOGENICIT

Is ission of woun
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in the course re Masmonteil
become exub- h is extracted
influence of ects in precipi-
painful and nd Masmonteil,
them have cessive rooms,
none that g the operator's
causing, he result in the
beginning quite effective
there not al tests show
that result alls are sterile
visceral ca n 75 per cent
question of n acceptable
operation h on Are the
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fresh and s e trouble of
to suppose ?
superimpos st intention,
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although o teurian and
uninterrup he right ?
healing ap e is No-
In view In actual
o be feared and therefore aga ps not yet
he invented the carbolic comparative
no longer because question of
air in our and shades of difference very
involuntate It would, however, be a
that the abandon interest in the subject.
in integral asepsis we have a condition
progress of which we do not yet know
t fance I have given full weight to all
objections that might be made to
present stion—difficulty, inconvenience, relative
the suppd expense. None of these is of
As a rule our oper ne We must never forget that,
They are not, fre time, no one but Lister at first
inflammation, ar hanging the traditional practice o
entirely free fro ling was as good as it need be
generally form wit was perfect And yet what terrible
aseptic, even thou more recent years have we not seen
Bacteriological tests who strenuously opposed the use
For this very reas es? Even a surgeon is a creature
of further improvem
notable renewal of re believe that some international
dishes, brought into cell undertake a fresh study of the
even, as I have pro asepsis, a subject which is of
abdomen for packing world Such an organisation
are always contamin necessary facilities of study to
presence of colonies of rs noted for their powers of
cocci The colonies ar mination For the present,
operating room They tement can be made in this
movement, if there are hat the Listerian idea still
are not duly masked on of surgical thought and
the operating field If ve promise of fruit
the spectators, the dis
colonies On the other hand, ounds
operating theatre is kept absolu wer, was not con
floor is constantly wet, and if the psis Its primary
and filtered on of wounds and
This all mean that the air of us Where do
theatres is usually heavily charged wi problem ?
we are operating, and all the more he knowledge of
the more it is disturbed The ordinar ounds, or of
fact surgeon, who is not readily distur years of
easily satisfied, will say perhaps "What es all at
it matter? Our patients do quite well, and which
untoward happens" But it is indeed true art to
although petri dishes exposed in proximity reamt
furnish colonies of microbes, our operation w only
pursue an undisturbed and absolutely apyretic co atch
They heal by first intention and, without a d result
give us smooth linear scars. But do none of tions

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* ister lecture for 1939 delivered before the Royal College urgeons of England on Apr 5
[illegible]

were obvious. Definite conclusions could really be reached, conclusions free from any ambiguity, provided that due care was taken to employ really comparable series of cases. In my view, in spite of the successes of many chemical substances—B.I.P.P., eusol, the hypochlorites, and the various aniline dyes and essential oils—and in spite of the magnificent results of the Carrel treatment, the conclusion is inevitable, that the large-scale experiment of 1914–18 established the failure, relative but none the less unmistakable, of antiseptics. It showed that what determined the fate of a wound was, above all, the vital quality of the tissues exposed to infection, and not the use of this or that chemical product Any wound that was clean-cut and free from contusion, if left freely exposed to the air, healed of itself, without any antiseptic aid. On the other hand, an irregular ragged wound, with separated edges and necrotic walls, suppurated for a long time, even when treated with appropriate antiseptics; whereas it remained sterile and could be sutured, if it were carefully excised. The essential point was that the excision should be carried through healthy tissues.

Direct surgery, then, superseded chemotherapy. Without such surgical intervention nothing was of any use. With it success was generally assured. Certain it is that, about 1917, we realised that, without the slightest chemical treatment and without risk, we might suture a well-excised wound even if it still harboured staphylococci or *B. perfringens*, provided that the vitality of the neighbouring tissues was satisfactory. Note that these observations are quite in line with conclusions drawn from bacteriological studies carried out on the operation wounds of present-day aseptic surgery. Here, too, infective omplications do not develop, in spite of a certain degree of contamination, if hæmostasis is efficient and the tissues are not traumatised.

What I have just said applies particularly to fresh wounds treated within a few hours of their infliction. May the same be said of wounds clinically infected? A priori one might say of these that certain antiseptics have proved their efficiency in such cases, but, even so, their effects require analysis Nowadays we know well enough, after seeing so many wounds suppurate despite all our efforts, that antiseptics are only successful in disinfecting wounds that are laid completely open, and we know that, whenever there are ragged edges, recesses, lacerated necrotic tags of tissues, blind tunnels, or dead spaces, even the best antiseptics invariably fail.

The best antiseptics are not those which in vitro have the greatest germicidal power, but those that have a powerful proteolytic action, such as Dakin's fluid, which rapidly destroys dead or dying tissues and acts, therefore, like a chemical bistoury It would probably be true to say that the process by which the germs disappear is of little moment, so long as they do disappear. Indeed such a proposition would not be incorrect. Nevertheless, if we are to make real progress in our art, we must understand things aright and not be satisfied with mere words. We must try to formulate the essential conditions of disinfection of infected wounds. Only then shall we be able, on the basis of actual knowledge, to see and understand the laws governing antiseptic action.

CONDITIONS OF DISINFECTION OF WOUNDS

condition of disinfection of an infected cerns the *character of the wound* The ds that are capable of spontaneous dis- or that are readily disinfected by antiseptics, are those that are freely exposed to the in every part. A deep wound cannot be effectiv disinfected with a chemical substance and a draina tube. Neither of these can achieve the simple be ficial effect of a clean cut with scissors. The m valuable of all antiseptic agents is the bistoury, w which the whole of the injured area can be given f exposure; and Carrel's method only achieved succ when it came to be realised that an initial complete surgical preparation was a necess preliminary to its application. Even now ma surgeons do not realise the practical importa of the systematic opening up of wounds, and in pea time, even as in war-time, the majority of failu registered in the treatment of infected wounds due to surgeons failing to respect this definite law

The second condition of disinfection is the *comp and prolonged immobilisation* of the wound and pa To understand fully the importance of this conditi it is necessary to specify exactly what happens in case of a wound imperfectly immobilised—a wou not properly put at rest We all know that dressing of an infected wound, especially if it situated near a bone or joint, is generally follo by a brisk rise of temperature What is less known is that, before the dressing, a blood-cult may be sterile, and yet two hours after the dres it is no longer so—the culture is positive. Movem therefore, in the case of certain infected wou causes a transient septicæmia. This accepted of clinical experience adequately explains the org disequilibrium that follows certain dressings. T was why Ollier, reasoning from simple facts of obse tion such as these, long ago made a system practice, in all his bone surgery, of changing dres as seldom as possible. He dressed his resec only after a long interval—a month, six week even longer—after the operation. This pra has indeed remained traditional at Lyons for three-quarters of a century and has hardly changed at all.

More recently, in America, the advantages immobilisation have been rediscovered and procla by Orr, and it cannot be disputed that these ad tages are generally very remarkable Even ser and acute infections of bones or joints may quiet d within a few days, if the affected part or lim adequately immobilised in plaster—and this in of the unpleasant odour which the dressing acquires. Within a few days the temperature come down to normal and the general condition of patient alter for the better. His appetite retu and his whole appearance is different. After sev weeks, it may be, when the dressing is changed for first time, the wound is found covered with abun fleshy granulations, well vascularised, of a colour, and remarkably healthy in appearance. erythematous skin round the wound is covered a thick sticky wax-like exudate. Bacteriolog examination of this exudate shows abundance micro-organisms, just as may be found in the dress and bandages On the other hand, howev, on few germs are to be found on the surface of the wo itself—not more than two or three perhaps in microscopic field. And in the depths of the wo the tissues are germ-free. I have proved this many times.

What exactly has happened? One cannot say. The micro-organisms have not merely died, since outside the actual wound they are a very numerous. It would appear as if they simply washed out of the wound by the exud ph, the direct result of the local congestion of the per tissues, whose normal static equilibrium, on ch the humoral balance depends, is defective or rely absent The same phenomenon can be a after exposure of wounds to the sun, even t can be demonstrated in cases treated by hyper ic solutions, as advocated by Sir Almroth Wright any case, there is the fact, and there are the lts We know that immobilisation is perhaps most valuable of all our therapeutic means of bating wound infection

LISTERISATION BY THE INTRA-ARTERIAL ROUTE

When the two conditions of wound disinfection ich I have just mentioned have been fulfilled, then only then, may chemical antiseptics be used in lition Their employment is not a mere prelude or accessory in, treatment of questionable value that antiseptics ought one to employ ? Surgeons the present day no longer make use of carbolic but they are not forgetful of what surgery to it In an address on Lister delivered in during the Lister centenary celebrations, my inguished friend, Archibald Young, recorded and trasted in a very striking way the pre Listerian post Listerian statistics of the Glasgow Royal rmary. They speak for themselves

ught we to remain faithful still to carbolic acid, Lucas Championnière in Paris, and my master, et, in Lyons, who were disciples of Lister from very beginning and remained so to the end of lives ? Or should the vogue of carbolic acid ccepted as a thing of the past ? We no longer w how to use it. In its stead we make use of the action of the hypochlorites, and we have recourse ermicides such as mercurochrome Given the litions specified above, these are certainly of t service in the treatment of wounds, but even have only a limited scope Their action is only rficial. Infection in the deeper tissues is ected by them Direct contact is required ween the germicidal agent and the micro organisms, successful result is to be achieved The germicide quickly decomposes, or tissue debris shuts it off close contact with the germs it ought to unter, hence the necessity as Carrel pointed of a constantly renewed supply of germicide

hat is one reason why, in ordinary daily practice, mical disinfection is difficult to use, especially in plicated cases, and why it meets with many ures It is not sufficient merely to register these ures They ought to have the effect of urging us ive careful consideration to the evidence that es before us from day to day Our observations h us, surely, that real disinfection acts from in outwards, beginning in the depths and later hing the surface Why then should we shut eyes to the evidence that we have, especially we have at our disposal nowadays means of cking the germs even in the tissue depths ? peaking of this I am not thinking of the intra ous route—wasteful as it is—of which one wonders can possibly be efficacious in a peripheral lesion am I thinking even of the intracardiac route, h I have employed in certain cases of septicaemia ve in mind, rather, the intra arterial route of ues, which has been taken up again by Reynaldo Santos, and regarding which dos Santos has ded some striking results.

Santos, over ten years ago, [illegible] that in serious infective conditions could some be arrested by injecting through the skin, and directly into the main artery of the affected regio either Gonacrine or mercurochrome His collaborato Cunha Lamas, published statistics of 120 cases o different types of infection treated in this way b intra arterial listerisation At the Strasbourg clini since 1929, we have been applying the intra arteri method in a considerable variety of condition We have stopped counting up the successes it ha given us in suppurative arthritis of all sorts, in earl cases of osteomyelitis, in lymphangitis, and in th pre gangrenous infective lesions of arteritis

Only the other day I had under treatment a youn man who was suffering from a suppurative arthrit of the elbow after an injury He had had a temperatur of 104° F for three days He received an injectio of 10 c cm of a 1 per cent aqueous solution of mercurochrome This was given into the axillary artery, an within a few hours his temperature fell to 99 5° F and remained down

Our experience of ten years, then, seems to justify us in claiming that disinfection by the introduction of antiseptics by the arterial channel is destined to become the method of choice Further, in view of the continuing progress of chemotherapy and the great hopes we have of the Prontosil group of drugs, it is probable that very soon we may be able to arrest, without much sacrifice of tissue, the progress of many infective lesions that hitherto have needed serious mutilation Obviously the method calls for technical and manual dexterity, and its employment requires judgment It is not a panacea, it has its limitations Infective conditions produce anatomical disturbances which may render its action incomplete or useless It therefore has its failures Yet, with a due sense of the importance of what I am saying, I have no hesitation in claiming that listerisation by the intra arterial route is a great step forward, and such a forward step may lead to further advance

INTRA ARTERIAL NOVOCAINISATION

Observation of patients treated like this in recent years has enabled us to analyse more closely the physiological mechanism which *infection* brings into operation in the tissues A considerable disturbance of the local vegetative equilibrium is brought about It follows that if Novocain is infiltrated into and about the region involved, in sufficient quantity to block vasomotor innervation, an incipient infective process may be aborted In the same way novocain infiltration of sympathetic ganglia may at once arrest the further development of a local or latent infection In view of observations such as these at the Strasbourg clinic, we were led ultimately to inject novocain into the main artery of a limb in which an acute infective process was beginning The infection subsided It seems, then, quite probable that, besides intra arterial listerisation, frankly antiseptic in its purpose and aiming at the direct destruction of germs, we have here a possible method of getting at the very mechanism of the inflammation and of averting by physiological means, the deleterious consequences of an infective inoculation We are continuing our researches along this line and have already obtained some unquestionably satisfactory results in salpingitis and in certain pelvic infections, as already recorded by Daniel

Here again, then, we have ground for substantial hope The main problem has assumed a new phase *Up to the present all efforts to treat infective processes* have been antimicrobic These later efforts are directed to the patient the microbe's host Just as it takes two to make a quarrel, two elements are necessary for the development of a disease, the host and the infecting organism. It can hardly be disputed that much is to be gained by looking after the one as well as the other. This is only a further demonstration that the Listerian conception is still capable of bearing fruit in our minds

THE LESSON OF LISTER

Such fruitfulness does not surprise us Ever since I received the honour of being asked to address you, I have been trying to penetrate the official and almost legendary figure of Lord Lister and to appreciate the real man Any man of outstanding personality is apt very soon to be depicted in legend and history on a somewhat artificial pattern. With the passage of time the hero becomes more and more an almost abstract figure, often quite different from what he was in life Through the pages of many addresses and panegyrics I have sought to find out what, after all, was the inner rhythm or essence of Lister's mind Having analysed him to the best of my ability, I desired to reconstruct for myself a picture of the man It is clear that it is not an easy thing to do Even in the case of living people we never see more than the shadowy outline of their personality, and we see it only through ourselves. On the other hand, the work that a man has done may well reflect the man himself, and we can often construct for ourselves a picture of the man through the lessons he has taught us, and, in so doing, not go very far astray

We have learned from Lister the supreme virtue of intuition, the strength of reason based on experimental research, and the creative power of persevering effort, of disinterested effort that is never satisfied but always strives to do better still And so Lister appears to me, above all, a man of unusual type to whom truth was directly intuitive, a man of complete honesty of mind and thought and deeply sensitive to everything human I picture him to myself a more or less solitary figure, working at his researches alone, his entire life centred on his purpose, ever master of himself, and determined yet restrained in all his ceaseless experimentation. His genius was not the kind that, in tumultuous fashion, carries everything before it. It was the sort which achieves victory slowly through the radiant glory of truth itself. Lister's work was securely based upon the solid rock, and, if ever work was beneficial to mankind, his surely was

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POTASSIUM AND THE T WAVE OF THE ELECTROCARDIOGRAM

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Towards the end of last century and during the first decade of the present century the physiologists, notably Ringer (1882, 1883) in this country and Howell (1899, 1902) in America, carried out a large number of investigations into the effect of the sodium, potassium, and calcium ions on the isolated heart of the frog and the terrapin Howell also experimented, though to a lesser extent, on the isolated mammalian heart On the whole, clinicians paid little attention to this work, and even the physiologists, with certain notable exceptions, seemed to lose interest ; and it was not until recent years, very largely result of the work on Addison's disease and experimental suprarenal insufficiency, that
inorganic ions came to reoccupy the interc
physiologists and to enter into the sphere of c
utility

So far as the mammalian heart is conce
Howell and Duke (1906–07) showed that an inc
in the concentration of potassium chloride in
circulating fluid of the isolated heart caused weak
and slowing of the beat, ending in inhibi
Mathison (1911) found that intravenous inje
of this salt produced ventricular fibrillation, th
the heart might also come to rest in diastole wit
any arrhythmia Similar results were obt
by Hering (1915) Apart from the studies of H
and Levin (1937) and Winkler, Hoff, and S
(1938), which will be referred to more fully
there is little information about the effect of potas
salts on the electrocardiogram.

METHODS

The serum potassium was estimated by the me
of Kramer and Tisdall (1921) as modified by P
and Van Slyke (1932), the blood being obt
from an antecubital vein without stasis 3½ h
after breakfast and the serum separated from
clot 1½ hours later All estimations were mad
duplicate In the taking of the electrocardio
every care was taken to ensure that the standar
tion should be accurate, 3 millivolts = 3 cm disp
ment of the fibre.

PRESENT INVESTIGATION

During the course of an investigation of the
of sodium and potassium salts on hypertension, w
is being carried out in collaboration with
O L V S. de Wesselow, an apparent cc
between the level of the serum potassium and
electrocardiographic changes has been noted, w
is of sufficient interest to report This correl
was first noted in a case of Addison's disease

Case 1.—A male, aged 24, was admitte
St. Thomas's Hospital under the care of
de Wesselow on May 13, 1938, with a histo
increasing pigmentation of the skin for one m
and dyspnœa on exertion, vomiting, and los
appetite for one week. On examination he was f
to be a typical case of Addison's disease in
crisis with marked pigmentation and hypote
(blood-pressure 88/58 mm. Hg). He was all
to rest in bed, taking an ordinary ward diet, wit
any medication, until the 17th, when the b
pressure was 70/45 mm. Hg ; on this date the s
electrolytes were estimated (table I) and the
day an electrocardiogram was taken (fig. 1a)
subsequent course of the serum electrolytes and
electrocardiogram is summarised in table I,
noteworthy feature being that a fall in the lev
the serum potassium from 31·6 to 8·3 mg per 100
was accompanied by a diminution in the heig
T_2 from 7 to 1·5 mm (fig 1). The patient rec
the usual treatment · a low potassium diet,
doses of sodium salts by mouth, and subcuta
injections of Eucortone ; he showed conside
improvement when he was discharged from hos
the blood-pressure being 104/74 mm. Hg.

In view of this striking apparent corre
between the level of the serum potassium and
height of the T wave, it was decided to inves
other cases and to study the point in other pa
to whom we had already administered large do
potassium by mouth for experimental purpos
the same time estimating the serum electrolyte
taking electrocardiograms The relevant c

I—SERUM ELECTROLYTES AND ELECTROCARDIOGRAMS IN ADDISON'S DISEASE (CASE 1)

	Serum			Blood urea	Hb	Electrocardiogram		
	Potassium	Sodium	Calcium			T1	T2	T3
	Mg per 100 c cm				Per cent	Height (mm)		
7	31	264 7	9 9	90	96			
8						1 5	7 0	5·0
1	17 7	303 1	9 9	37	78			
1						1 0	4 0	2 5
9	15 9	309 6	11 5	26	93			
0						0 75	2 0	1 5
3	8 3	310 5	9 8	21	79	1 0	1 5	0 75

res of these patients are as follows (table II ding details of the changes in the serum electro the height of the T waves, and the dosage of arious salts which were administered) —

SE 2 —Female aged 31 Chronic nephritis uræmia Blood pressure 205/125 mm Hg patient was rather upset by the potassium e, which caused considerable nausea and ting, hence it was impossible to estimate how of the salt she had absorbed Fig 2 shows the ocardiograms obtained before and after the nistration of potassium

CASE 3 —Female, aged 35 Chronic nephritis and uræmia Blood-pressure 250/130 mm Hg

CASE 4 —Female, aged 22 Malignant hypertension Blood-pressure 210/110 mm Hg Died on Oct 27, 1937

CASE 5 —Female, aged 43 Essential hypertension Blood pressure 180/115 mm Hg Subtotal thyroidectomy a year before admission

CASE 6 —Male, aged 40 Admitted under the care of Dr H K Goadby for investigation on account of allergic symptoms

DISCUSSION

Nicholson and Soffer (1935) found a bradycardia in suprarenalectomised dogs, and in eight of these, in which they obtained electrocardiograms, auricular fibrillation with a slow ventricular rate was demonstrated, which they attribute to the high level of serum potassium in their animals (13 3–23 6 m eq/litre) As they themselves point out, this arrhythmia is not common in Addison's disease, but the levels of serum potassium found in this disease never approximate in magnitude to those found in the suprarenalectomised dog There is a difference of opinion as to the electrocardiographic changes in Addison's disease Duque Sampayo and his colleagues (1934) reported a prolongation of the S–T interval with low voltage, whereas Albers and Thaddea (1937) reported decreased amplitude of the deflections with inversion of T and depression of the S–T interval Frates (1934) found a definitely high T wave in four out of seven cases in which electrocardiograms were taken, the T wave, he claimed, was high in cases of moderate

E II—SERUM ELECTROLYTES AND ELECTROCARDIOGRAMS IN CHRONIC NEPHRITIS (CASES 2 AND 3), MALIGNANT HYPERTENSION (CASE 4), ESSENTIAL HYPERTENSION (CASE 5), AND ALLERGY (CASE 6)

	Serum			Blood urea	Hb	Electrocardiogram				Remarks
	Potassium	Sodium	Calcium			T1	T2	T3	T4	
	Mg per 100 c.cm				Per cent	Height (mm)				
CASE 2 (1938)										
17							1 5	2 0	4·0	Oct 20 24 Pot citrate 15 g daily by mouth, considerable vomiting
18	22 6		10 8	258						
25						1 5	1·0	3 0	12 0	
29						0 5	1 5	2 5		
CASE 3 (1938)										
18	22 1		10 3	195		2 0	2 5	1 0		Oct 28–Nov 4 Pot citrate 1 6 g daily, total consumption 32 5 g
24						2 0	1 5	1 0		
28						3 0	4	2 0		
4	25 1		10 9	165		3 0	4·0	1 0		
11	20 4		9 9	119						
CASE 4 (1937)										
30	16 2	325	6 4		50	2 0	3 5	5·0		Oct 5–8 Pot citrate 5 g daily by mouth Oct 15–21 Parathormone, 5 units daily
2										
5	20 7	313	6 6	276	42	2 5	7 0	9 5		
6										
8	33 1	315	6 5	345	45	2 0	7·0	10 0		
11										
13	19 3	324	6 1	360	25	1 0	6·0	6 0		
16						2·0	7 0	6 0		
21	25·0	332	5 7		30					
CASE 5 (1938)										
19	19·6	321 1	11·0	21	86	5	2 0	−1 5		May 20–27 Sod citrate 15 g daily by mouth, sod chloride 30 g daily by mouth May 27–June 14 Pot citrate 15 g daily by mouth, pot chloride 15 g daily by mouth
27	19 9	314 3	9 8	20	83	3 0	1 5	−4 0		
7	21 5	314 4	10 8	19	77	5 0	2 0	−5 0		
14	17 3	312 4	10 5	20	80	5 0	1·0	−5 0		
27	16 3	320 4	10 8	19	80	4 0	0 5	−4 0		
CASE 6 (1938)										
18	19 4		12 9	20		1 5	1·0	−0 75		Nov 21–25 Pot citrate 15 g daily by mouth Nov 23–25 Pot chloride 15 g daily by mouth Nov 26–28 Pot chloride 20 g daily by mouth vomited each day after final dose of 5 g
25						2·0	3·0	0 75		
28	21 7		11 8	33		2·0	3 0	1 0		
5	17 8		11 1	21		1·0	1·0	−0 5		

INDICATIONS FOR ADHESION-CUTTING IN ARTIFICIAL PNEUMOTHORAX

WITH THE RESULTS OF FIFTY CONSECUTIVE THORACOSCOPIES

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THE introduction of thoracoscopy and adhesion-cutting by Jacobaeus has improved the results of treatment of pulmonary tuberculosis by artificial pneumothorax very considerably, but at present the generally accepted indications for the division of adhesions are somewhat limited For various reasons to be mentioned later these indications should be extended. It is principally from this point of view that this paper is written.

INDICATIONS

The usually accepted indications for the division of adhesions are: (1) persistence of a cavity; (2) persistence of tubercle bacilli in the sputum, and (3) repeated hæmoptysis Matson (1929), in America, adds two more: (4) failure of the sputum to continue to decrease in spite of the artificial pneumothorax; and (5) clinical evidence of an adhesion causing symptoms, such as paroxysmal cough, or a slight rise of temperature at the time of refills, or perhaps the persistence of pleural effusion

These are the most important indications so far as the immediate recovery of the patient is concerned; but, if the final results are in view, as judged over a period of five years, the division even of apparently harmless adhesions should be considered. These apparently harmless adhesions may prevent firm healing of the lung. This is demonstrated by the following facts:—

(1) Saugmann and Gravesen (Gravesen 1925) classify the results of their treatment of pulmonary tuberculosis by artificial pneumothorax into three groups: (*a*) cases with a free artificial pneumothorax; (*b*) cases with adhesions but otherwise a satisfactory artificial pneumothorax; and (*c*) cases with adhesions which prevent the artificial pneumothorax from being satisfactory. Their results over a period ranging from 5 to 13 years show that in the first group 70 per cent of patients were well and at work; in the second group 33 per cent were well; and in the third group only 11 per cent. were alive and well. Matson (1929) and Unverricht (1924) also published the results of their treatment of pulmonary tuberculosis by artificial pneumothorax, and both thes of figures confirm the findings of Saugma Gravesen These results clearly show the imp of a free artificial pneumothorax.

(2) In some cases of pulmonary tuber treated by artificial pneumothorax the lung down again at the site of the original lesio the termination of the artificial pneumot which apparently controlled the disease while maintained In these cases there is of adhesion over the diseased area which p complete relaxation of this portion of the This is demonstrated by the serial radiogram patient in whom the disease became active when the lung was allowed to re-expand after years of apparently successful treatment by ar pneumothorax (see figure)

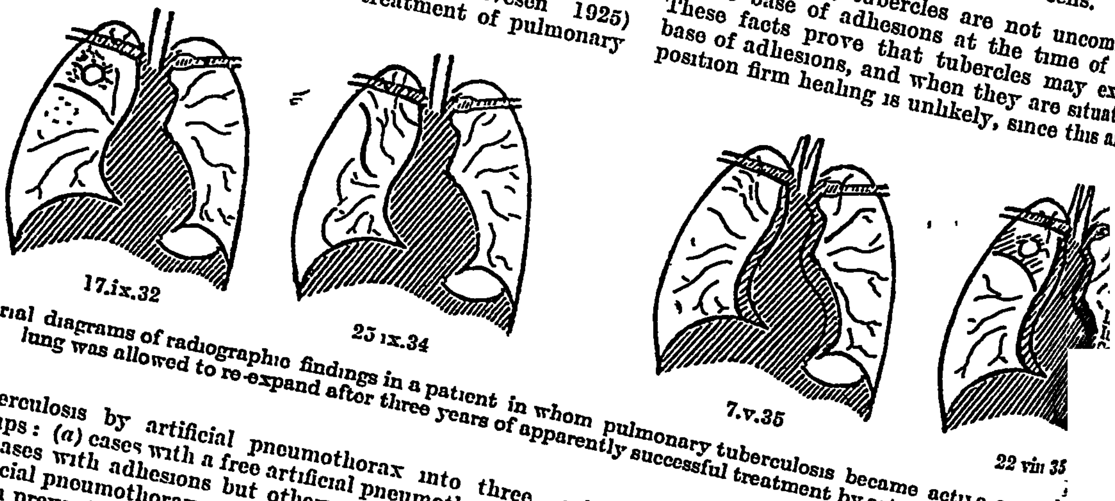
(3) Post-mortem examinations have been formed on patients who have died from some cause while being treated for pulmonary tuber by artificial pneumothorax Sections of the coll lung and adhesions have shown caseous tuber the base of an adhesion, whereas the rest of th had apparently healed.

This has been confirmed at the Lon Hospital, where there is a specimen of th pleura of a man who had pulmonary t which had been treated by artificial pne for three years. He then committed suicid specimen shows the collapsed lung and pl three adhesions. One of the small apical was divided longitudinally, and macroscopi showed a small caseous tubercle at the ba adhesion. The portion removed was secti microscopically examined. Small round-ce tion and some endothelial proliferation wer strated, but there were no giant-cells.

Furthermore, tubercles are not uncomm at the base of adhesions at the time of e These facts prove that tubercles may exist base of adhesions, and when they are situated position firm healing is unlikely, since this area relaxed and with every respiration and hea the diseased part of the lung is pulled upon.

The operative risk of introducing a cannu studying an adhesion is almost negligible, proved by the great number of published re successful thoracoscopies

I submit therefore that, in any case of pul tuberculosis treated by artificial pneumothor which there are adhesions that appear divisib patient should be thoracoscoped and the adh divided, if this can be safely accomplished. Th scopy should be undertaken even though the



17.ix.32 23.ix.34 7.v.35 22 viii 35

Serial diagrams of radiographic findings in a patient in whom pulmonary tuberculosis became active again wh lung was allowed to re-expand after three years of apparently successful treatment by artificial pneumothor ltion of the patient, the radiogram, and the um examinations are satisfactory The import of the word "safely" cannot be overestimated, lthough there is almost no risk in thoracoscopy the inspection of an adhesion the division of an sion entails a definite risk If the division can afely performed it should be done, if not, the sion should be left alone, since the clinical con- n of the patient in these cases is satisfactory does not justify this additional risk

support of this thesis it may be mentioned that bring of Stockholm and Tuxon of Oslo (personal nunications 1936) consider that adhesions should vided even though apparently harmless During last few years they have divided this type of sion whenever the operation could be performed safety Since Gullbring has adopted this measure, esults show a considerable improvement

us patients suitable for adhesion cutting can be led into two groups —

Those with apparently harmless adhesions

Those in whom the artificial pneumothorax is isfactory because of adhesions, as shown by persistence of a cavity or of tubercle bacilli in putum or by repeated hæmoptysis

RESULTS

urposes of analysis my cases can conveniently vided into the above two *groups*

oup 1 consists of 10 cases in which the general ition was good, no tubercle bacilli were demon- d in the sputum, no cavity was seen radio- lly, and no hæmoptysis had occurred since the tion of the artificial pneumothorax The only ation for dividing the adhesions was to produce re perfect artificial pneumothorax In this there was no constitutional disturbance In s a free artificial pneumothorax was produced, n the remaining 3 cases the collapse was considerably improved After thoracoscopy the temperature remained normal in all the cases except 3 in which it was raised to 99° F for two evenings There was no effusion, or it remained the same in quantity in all the cases *except 3*, *in these there was* a small effusion which was absorbed in the course of a few days. There was *slight surgical* emphysema in 5 cases There was no bleeding in any of the cases

TABLE I—RESULTS IN GROUP 1

number of cases		10
esult	Free artificial pneumothorax	7
	Improved collapse	3
	Collapse remained the same	0
berature	Normal	7
	Raised to 99° F *for two days*	3
fluid	None or in statu quo	7
	Trace	3
rgical hysema	None	5
	Slight	5

TABLE II—RESULTS IN GROUP 2

Lung entirely freed	10 cases
Improved *collapse*	17 "
Collapse remained the same	5 "

REACTION	Immediate	Delayed
erature—		
rmal	14	0
l (up to 100° F)	19	1
erate (up to 103° F)	3	1
ero (above 103° F)	1	1
effusion—		
e or trace	33	0
erate	4	0
ro (more than half way up the thorax)	0	2
tained effusion	1	
ema	0	
al emphysema—		
e or slight	31	
erate	8	
re	1	

Group 2 contained 32 cases A cavity was present in 29, and in the remaining 3 the sputum contained tubercle bacilli although there was no obvious cavity In 8 *cases two thoracoscopies* were performed *on* the same patient, hence the number of thoracoscopies in *this group is 40*

No bleeding occurred at any time that could not be easily controlled by diathermy

I would like to express my indebtedness to Dr F G Chandler for his help

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ILLNESS OCCURRING IN CONTACTS WITH CONFLUENT SMALLPOX

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An instance of the introduction of variola major into England from India was recently recorded by Mellows (1938) A young airman travelling by sea from Australia was infected by smallpox during a *shore trip* made at Bombay, where the disease was prevalent He was taken ill during the last part of the *voyage and on arrival* was *removed directly from* ship to hospital, where he soon afterwards died *Within three months six cases of variola major, three* of them fatal, occurred among a population of 42,000 resident within 1½ miles of the hospital, but in none of these cases was a direct connexion established with the imported case

The airman referred to above was landed at the hospital about 9 A M on March 4 This was the eighth day of his illness and the fifth day of the confluent eruption, which, for the most part, had reached a vesicular stage but on the face was beginning to become pustular Sixteen persons were in direct contact with him between his arrival in the port and his death four days later These comprised two boarding medical officers, five members of the crew of the launch in which he was transferred from ship *to hospital, three members* of the *nursing* staff at the hospital, three members of the medical staff of the port authority (*other than the two boarding officers*), a doctor relation who was frequently with him in *hospital*, and *two medical officers of the Ministry* of Health who saw him together on a single occasion Within a few days of contact seven of the sixteen persons enumerated above experienced febrile illnesses which had many features in common The dates of contact and details of the illnesses of the seven persons (designated as A, B, C, D E, F, and G) are given in the accompanying table, from which the following points may be noted —

Age —This ranged from 20 to 48 years

Sex —All were males The only female contacts were three members of the nursing staff at the hospital

DETAILS OF AN ILLNESS OCCURRING IN CONTACTS WITH SMALLPOX

Case	Sex and age	Reason of contact	Date of contact in March	Successful vaccination and revaccination before contact	Date successfully revaccinated after contact	Result of revaccination after contact	Date of onset in March	Apparent incubation period (days)	Maximal pyrexia noted	Duration of pyrexia (days)	Date of rash in March	Main symptoms*	Days off duty
A	M 38	M O, P A staff	4–8	Infancy 1928 1936	Mar 5	Max. react 3rd–4th day	11	3–7	103° F	7	—	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	[illegible]
B	M 29	Ditto	4	Infancy	„ 10	Max react 3rd–4th day	11	7	104° F	6	13–15	1, 2, 3, 4, 5, 7, 9, 10	[illegible]
C	M 37	Ditto	4	1930	„ 5	Max react 3rd–4th day	9	5	?	2	—	1, 2, 3, 5, 9	[illegible]
D	M 37	Launch crew, P A staff	4	1936	„ 4	Max react 3rd–4th day	9	5	?	4	13	1, 2, 3, 5, 9, 10	[illegible]
E	M 48	Doctor relation	4–8	1932	„ 4	Max react 3rd–4th day	14	7–10	101 8° F	3	—	1, 2, 3, 4, 5, 6, 9, 10	[illegible]
F	M 48	M O, Min of Health	5	Infancy 1922	July 14	Max react 4th day	14	8	103° F	3	—	1, 2, 3, 5, 9, 10	[illegible]
G	M 35	Ditto	5	Infancy 1926	Mar 7	Max react 7th–8th day	14	8	101° F	3	—	1, 2, 3, 5, 6, 9	[illegible]

* *Index to main symptoms*—1 Headache 2 Shivering 3 Muscular or joint pains 4 Backache 5 Generalised muscular tenderness 6 Sweats 7 Nausea 8 Vomiting 9 Subsequent lassitude 10 Subsequent dyspnœa on exertion. Max react = maximal reaction

who were in attendance on the patient for several days before he died. These persons had been successfully vaccinated and revaccinated before contact. They were again revaccinated on March 4. In two the reaction was of the kind usually associated with complete immunity to smallpox (maximal reaction within twenty-four hours) and in one that associated with partial retrogression towards susceptibility (maximal reaction on the fourth day).

Degree of contact—In two (A and E) this was intimate and repeated. In three (D, who assisted with the landing stretcher, F, and G) it was limited to a single occasion and did not last longer than 30 minutes.

Apparent incubation period—In one of the three who were in contact on a single occasion only the illness began after five days, and in two after eight days.

Vaccinal condition.—All had been successfully vaccinated or revaccinated before contact. In B, who was vaccinated in infancy, there was a history of two unsuccessful attempts at revaccination. Successful revaccination preceded contact in F by 16 years, in G by 12 years, in C by 8 years, in E by 6 years, and in A and D by 2 years.

Six were again revaccinated within forty-eight hours after contact. In all except B this revaccination was successful and the resulting reaction reached a maximum in three to four days. In B the revaccination on the day of contact did not provoke a reaction, but a second attempt six days later was successful. F was not revaccinated between the time of contact and the illness.

Severity of the illness.—In two, as judged by the height and duration of the fever and by the period of sick absence, the illness was severe In four, as judged by the same standards, it was moderately severe, and in one slight.

Onset.—In all seven this was sudden, with fever, headache, shivering, and pains in muscles or joints. In two there was also a preliminary nausea, and in one vomiting not otherwise accounted for.

Course of the fever—In five cases occasional observations of the temperature were made, and these showed a maximal fever on the second day of the illness In four the fever subsided on or before the third day

Skin eruption occurred in B and D only. On the third and fourth days of his illness B developed a sparse papular rash with three lesions on the face, one on the trunk, one on the right wrist, and two on the palm of the left hand. All the papules became vesicular, and a few subsequently suppurated, leaving scars. The appearance, distribution, and course of this eruption were consistent with a diagnosis of smallpox. On the fourth day of illness D developed a transient sudaminal rash which was limited to the ankles, knees, and elbows This eruption neither became vesicular nor suppurated, and it disappeared within forty-eight hours, leaving no scars

Symptoms.—General symptoms dominated the illness, headache being severe until the fever subsided. There was neither soreness of the throat nor any complaint of nasal obstruction. Three complained of severe backache, three of drenching sweats, and all seven of generalised muscular tenderness.

Sequelæ.—In all there was lassitude for several weeks, and in two a moderate degree of dyspnœa with a tendency to undue perspiration on exertion.

Absence of illness in contacts.—No illness of the same kind was reported among family or other contacts of the seven persons affected

DISCUSSION

The occurrence more or less simultaneously of a febrile illness in seven among sixteen contacts of a single smallpox patient appeared to be something more than a coincidence The circumstances suggested that a single pathogenic agent was the cause, and that this had been encountered during contact with the imported smallpox case The symptoms were similar in all the persons affected, and in F and G, who were together in contact with the patient on one occasion only, there was a remarkable simultaneity of onset. Symptoms or signs suggesting that a bacterial agent caused the illness were entirely absent The almost complete absence of localising signs in the respiratory tract or lungs and the lack of spread to family or other contacts appeared to exclude epidemic influenza.

The illness may have been a modified form of smallpox. In two patients there were skin eruptions, and in one (B) the appearance, course, and distribution of the rash were consistent with a diagnosis of variola The apparent incubation period in this patient was seven days, which was also the average apparent incubation period of the whole group The illness of B before the development of his rash, although possibly a little more severe, was similar to that of the other seven Partial susceptibility to smallpox and vaccinia is believed to be associated with an accelerated reaction to vaccination Having regard to the probable similarity between naturally occurring variola and artificial infection with vaccinia, it is not unlikely that, if immunity to the former produced by vaccination, although incomplete, was nevertheless sufficient to modify the disease to the extent of aborting the characteristic eruption, the incubation period would tend to be less than the usual twelve days

The first description of smallpox without an eruption (variola sine variolis vel sine eruptione) has been attributed to Thomas Sydenham, whose "Medical Observations concerning the History and Cure of Acute Diseases" was first published in 1676 In the section of this work devoted to "the continued fever of the years 1667, 1668, and 1669" there is a description of a "variolous fever" which was, in the words of the author, "with the exception only of those symptoms which were the necessary effects and consequences of the eruptions, if not identical, closely akin to the small pox" This fever was, however, a protracted illness, since "it distressed the patient (unless he died first) with the severity of its symptoms for seven or eight weeks together," and therefore it cannot be regarded as identical with the illness occurring in smallpox contacts which has been described above According to Fagge (1886) the term "variola sine variolis" was first used by de Haen in 1776

Curschmann (1875) noted that smallpox might terminate in the initial stage and recorded an instance of a woman in which it did so but who later bore a child with the characteristic eruption of variola Clinical descriptions of smallpox without eruption have also been given by Ricketts and Byles (1908), and by Kathe (1918) The latter recorded an incident in a German military hospital during the war, when 5 among 42 vaccinated and revaccinated contacts of a smallpox case apparently passed through the initial stages of a smallpox illness, but only 1 developed the characteristic eruption A personal experience of this kind of illness has been recorded by Lawrence (1938), who, three days after nursing a case of confluent smallpox fatal on the tenth day at a Chinese mission hospital, became ill with fever up to 103° F, headache, lassitude, and slight pain in the back No skin eruption developed, recovery was complete on the fourth day, and none among several other contacts was affected This author regarded his illness as an attack of smallpox cut short by the protection gained from vaccination regularly repeated every seven years MacCombie (1912) remarked that he had only seen such cases in vaccinated or revaccinated persons, but it is probable that smallpox without eruption has occurred in unvaccinated as well as in vaccinated persons

If the illness under discussion was a form of smallpox, it may be noted that none of the patients infected contacts Fagge (1886) mentions an instance recorded by Marson, in which a woman, whose smallpox illness terminated without eruption, apparently infected her sister, but Ricketts and Byles (1908) were of the opinion that the toxæmia of smallpox was seldom infectious, and stated that measures for the control of contacts with patients who suffered from variolous toxæmia which had not been followed by efflorescence were unnecessary Gins (1924) affirmed, however, that cases of smallpox were infectious before the eruption by reason of unobserved lesions on the mucous membrane of the throat and nose Cumpston and McCallum (1925) considered the pre-eruptive period of toxæmia had been infective in some of the cases they encountered during Australian outbreaks The immediate contacts of A, B, C, D, E, F, and G were familial and, with one exception, all were successfully vaccinated or revaccinated in time to obtain protection if the illness had been smallpox, it follows therefore that failure to infect others is not conclusive evidence against the illness described having been smallpox in a modified form

Six of the persons taken ill were revaccinated soon after contact, and in several of them the illness which coincided with the presence of a skin reaction to revaccination was at first regarded as being of vaccinal origin F, however, was not revaccinated during the interval between contact and illness, yet his experience was similar to that of the six who were This appeared to exclude the possibility that the illness was a form of vaccinia

A further examination of the vaccinal condition of the six persons who experienced the illness a few days after successful revaccination was not made, because it did not seem likely that it would provide information of any value On the other hand, the last successful revaccination of F was as long ago as 1922, and in him the result of a revaccination *after* the illness appeared to be important Accordingly, approximately four months afterwards he was revaccinated in one insertion on the left upper arm The resulting reaction reached a maximum and took the form of a small vesicle in the space of four days, indicating partial retrogression towards susceptibility to smallpox and vaccinia This finding does not exclude the possibility that the illness experienced by F in March, 1938, was a form of smallpox Absence of the characteristic eruption might have been associated with failure to develop a complete immunity to vaccinia Chapin (1910), quoting Armstrong on this point, mentioned three cases of smallpox without eruption which were subsequently found refractory to vaccination

It may be concluded from the foregoing that a careful observation of non specific illness occurring within the usual period of incubation in vaccinated or unvaccinated smallpox contacts might reveal factors of considerable importance in the epidemiology of the disease

SUMMARY

(1) An illness occurring in seven contacts of a fatal case of confluent smallpox is described

(2) Possible causes of this illness are discussed

The author wishes to thank Sir Arthur MacNalty, Dr J R Hutchinson and Dr P B Mellows for their help in the preparation of this paper.

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EXTENSIVE THROMBOSIS AFTER PENTOTHAL SODIUM INJECTION

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The increasing use of the intravenous route for the administration of diagnostic, therapeutic and anæsthetic solutions has inevitably led to an increasing number of secondary thrombotic and other local effects. As a rule these effects are trivial, and they rarely lead to any serious complications, but it must be recognised that the intravenous route can never be entirely devoid of risk. In the case of intravenous anæsthesia, Pentothal sodium has been found to cause local thrombosis in a small proportion of cases, and for this reason the 5 per cent solution is preferred, being less likely than the 10 per cent solution to give rise to this complication. The present case is recorded as an example of extensive thrombosis in superficial veins of the upper limb following the use of the 5 per cent. solution, and incidentally as the most extensive thrombosis I have ever seen following any intravenous procedure in this situation.

CASE-RECORD

The patient was a man of 67 who came under my care on account of varicose veins. During the Boer war he contracted typhoid fever, and shortly afterwards he had two attacks of phlebitis in the left calf. There was nothing in his history to suggest that he had ever had a deep thrombosis. There had been two further attacks of phlebitis in the left calf, the last being 20 years ago. He had had his prostate removed 18 months before coming under my care. Since then the veins had gradually increased in size in both legs and there had been a great deal of trouble with eczema in the left calf.

The patient was well built but rather plethoric, and his superficial venous system generally was of the prominent thick-walled type often found in athletes. Both internal saphenous veins from the groins to the ankles were thick-walled, much dilated, and incompetent. In most places the veins were relatively straight, but in the lower part of the calves they were very tortuous. A marked degree of venous congestion was present in the region of both internal malleoli, and dermatitis was starting to develop in the skin of the lower and inner part of the left leg. Operation was advised on account of the extent of the incompetent veins and the troublesome skin irritation.

On the morning of operation the patient was given 1 c.cm. of Omnopon. Dr. Frankis Evans then gave 0·5 g. of pentothal sodium in 5 per cent. solution into the right median basilic vein. The vein was large and prominent and there was not the slightest difficulty in getting into it. The whole injection was intravenous, and the time of the injection was 1½–2 min. Subsequently the patient was given gas and oxygen and the operation for the ligature and excision of the varicose veins in both lower limbs occupied 2 hours.

On the second day after operation the patient complained of pain in the right antecubital fossa near the site of injection. There was no evidence of local swelling or discoloration, but the vein itself was palpable for about 2 in. as a slightly tender cord. Following this the thrombotic process gradually extended both up and down the arm. By the fifth day after operation the thrombus had extended distally along a large superficial vein of the forearm as far as the lower and outer part of the radial styloid process, and in a proximal direction as far as the anterior fold of the axilla. There was no redness or discoloration of the skin, and there was hardly any appreciable thickening of the tissues around the vein. The whole course of the thrombus was tender and the patient complained of severe discomfort in the upper limb which he attributed to rheumatism. The thrombus did not appear to extend beyond the anterior fold of the axilla. The condition was at its worst from the fifth to the eighth days after operation, after which resolution began. By the time the patient left the nursing-home 17 days after operation the vein was palpable as a slightly tender cord in the arm and forearm.

Thrombosis is a recognised though rare complication following the use of pentothal sodium, and most papers published on the subject mention that this drug seems to produce thrombosis more readily than the other barbiturate derivatives. Some of the papers which have referred to local complications following the use of pentothal sodium are given at the end of this article. Local inflammatory complications may also follow leakage or extravasation of the solution into the subcutaneous tissues. There was nothing in the case recorded here either at the time of the injection or later to suggest that there had been any leakage. There was no difficulty in giving the injection, and there was never any local swelling or discoloration, or scarring of the tissues adjacent to the injection.

SUMMARY

A man of 67 developed extensive thrombosis of the superficial veins of the forearm after the intravenous injection of 0·5 g. of pentothal sodium in a 5 per cent. solution. There was no evidence of leakage into the surrounding tissues.

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FEMORAL HERNIOPLASTY

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Reference to the current textbooks of surgery is disappointing as regards the treatment of femoral hernia.

Romanis and Mitchiner (1937) describe the treatment but do not give any end-results. Thomson and Miles (1931) and Choyce (1932) discuss the inguinal operation, also without giving results. Rose and Carless (1937) admit 20–30 per cent. recurrence from the low operation. These authors, as well as Bailey and Love (1936) mis-spell "Lotheissen's" operation.

In the English monographs, McAdam Eccles (1908) does not mention the inguinal route, and Hutchinson (1923) gives the expectation of a permanent cure as 80 per cent. He refers to Lotheisen's operation.

There are two valuable papers: those of Keynes (1927), who points out that mere removal of the sac does not cure, and Souttar (1934) on the surgical anatomy of femoral hernia, with good drawings.

The history of the subject is fully dealt with by Watson (1924), who gives the credit of the introduction of the inguinal route to Annandale, of Edinburgh, in 1876.

There is not much recent continental literature on this subject. One or two papers have appeared on the use of fascial transplantation.

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ANATOMICAL DETAILS OF SURGICAL IMPORTANCE

Transversalis fascia—When the external oblique aponeurosis has been divided and the cord or the round ligament held up, the strong layer of transversalis fascia is seen forming the floor of Hesselbach's triangle. This is important because it has to be divided and sutured before the operation is completed

Peritoneal sac—The peritoneum concerned consists of (1) a suprasaccular portion, (2) the mouth and neck in the crural canal, and (3) the body or fundus below the inguinal ligament (Poupart's)

The suprasaccular portion is lax, voluminous, and funnel shaped, narrowing to the mouth below It is usually covered by a layer of fat and can easily be stripped from the iliac vein on the outer side and the bladder on the inner side In front it may bulge forwards like a small direct inguinal hernia When excised at operation this portion of the peritoneum should measure at least 2 by 3 in Wide resection and suture of this portion of the peritoneum is one of the details essential to the success of femoral hernioplasty

The mouth often shows the fibrous thickening described by Souttar This fibrous ring renders the mouth permanently patent

The fundus is invariably covered by a thick layer of lobulated fat, which impedes the reduction of the sac through the crural canal

Ligamentous structures—The fibres of the inguinal ligament are usually well developed and afford a suitable material for the pedicled facial flap to be described later The pectineal portion or lacunar ligament (Gimbernat's) is an important structure to recognise In strangulated femoral hernia the fibres may be cut or stretched to increase the size of the ring The pedicled flap is stitched to its outer border (see figure)

The pectineal ligament (Cooper's) is a strong band of white fibres easily seen on the pubic ramus, when the bladder is held out of the way by gauze on a sponge holder It forms a suitable anchorage for the free end of the pedicled flap

Blood vessels—Access to the deeper parts of the wound is such that any abnormal vessels can easily be picked up and ligatured

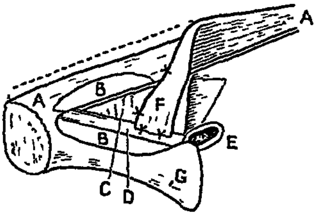
FEMORAL HERNIOPLASTY THE OPERATION

Experience has led to the modification of one or two details in the operation originally described (Cowell 1927) A curved incision is made through the skin and superficial fascia from the pubic tubercle to a point 1 in below and internal to the anterior superior iliac spine The flap is turned down by gauze dissection The oblique aponeurosis is opened by an incision above the centre of the canal to allow of a flap from the lower portion being turned in later The cord or round ligament is displaced and the transversalis fascia divided

Isolation of suprasaccular peritoneum—The finger is passed backwards on the inner side of the external iliac vein, then inwards, along the pectineal ligament, behind the upper portion of the sac, and then hooked forwards to complete its separation The fatty covering of the sac at the saphenous opening is exposed by gauze dissection Gentle traction from above, combined with pressure from below, will generally deliver the empty sac through the crural canal If the contents are irreducible, the peritoneum above is incised, and the contents are dealt with before this procedure is attempted Occasionally it is necessary to stretch the crural opening or even to incise the fibres of the lacunar ligament The whole sac is now held up and freed from the bladder on the inner side by gauze dissection

Excision of sac—A wide excision of peritoneum is essential to success The peritoneum is clipped by a series of forceps, beginning on the inner side, and cut away with scissors There is no difficulty in suturing the long incision

Closure of the opening into the crural canal—A flap, half an inch wide, is cut from the lower portion of the inguinal ligament, passed through a small opening in the transversalis fascia, and stitched to the pectineal ligament Its inner border is stitched to the lacunar ligament above A firm flap is now in position which effectively closes the crural canal The iliac vein is on the outer side, and no stitches are needed here



Drawing made from a post-mortem preparation Femoral hernioplasty viewed from above A inguinal ligament (*Poupart's*) showing pedicled flap, B, transversalis fascia, divided parts turned back, C, lacunar ligament (Gimbernat's), D, pectineal ligament (Cooper's), E, iliac vein in sheath, F, flap cut from A, covering the opening of the crural canal, stitched in position, G, part of pubic bone

If desired, fascial strips can be used as sutures, but thread is perfectly satisfactory The small femoral hernia needle made by Mayer and Co, held on a needle holder, is useful for passing these deep stitches

Completion of operation—The incision in the transversalis fascia is sutured, the cord or round ligament replaced, and the canal closed by suturing the cut edges of the external oblique aponeurosis The superficial fascia and skin are sutured in the usual way

This operation takes 30–40 minutes and may be performed even in strangulated hernia in elderly patients, when it is advisable to get out of bed the day after operation

ANALYSIS OF OPERATIONS

The accompanying table shows the incidence of femoral hernias according to sex, age, and side in a series of 700 hernia operations

Sex	Cases	Age limits	Commonest age	Right side	Left side
Males	23	22–71	40–50	14	9
Females	48	6–80	50–60	31	17

Femoral herniotomies 1925–38 71

The contents of the sac have included fluid (hydrocele of sac) omentum large and small bowel, appendix, fallopian tube, and, in one patient, a strangulated appendix epiploica

The recurrence rate accepted by modern writers is 4–5 per cent In my series, in which the patients have been carefully followed up, there has so far been only one case of slight recurrence, a bulge not bad enough to operate on.

The efficient closure of the ring allows the patient to get up at the earliest possible moment. This prevents elderly patients from developing pneumonia My series included six resections for gangrenous gut.

There was only one death, that of a mental patient in a grave condition before operation for a strangulated hernia requiring resection of the bowel

CONCLUSIONS

Femoral hernioplasty is a safe and satisfactory operation, easy for an experienced operator to perform. The results are good, a recurrence-rate of about 1 per cent. may be expected. It is a suitable operation for elderly and infirm patients. Several of my patients were over 70 years old and one over 80.

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POSTPARTUM NECROSIS OF THE ANTERIOR PITUITARY

PRODUCTION OF SUBSEQUENT PREGNANCY

BY H. L SHEEHAN, M.D, M Sc Manc
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ROBIN MURDOCH, M.B. Glasg.*
EXTRA ASSISTANT OBSTETRIC SURGEON TO THE HOSPITAL

IN a recent article (Sheehan and Murdoch 1938a) we have pointed out that patients with anterior-pituitary insufficiency, due to a previous postpartum necrosis of this gland, can be cured symptomatically by a subsequent pregnancy, provided there are no serious complications at the delivery. Two of the cases in that paper (cases 2 and 4) had only been followed for a short time after delivery. The subsequent history of these patients appears worthy of record: in each of them menstruation began two months after delivery and has continued since at regular monthly intervals and in normal amount, six times in case 4 and eight in case 2

The method of treatment in patients who have complete or partial amenorrhœa with a normal-sized uterus has been to encourage the patient to become pregnant In patients who have developed superinvolution of the uterus, however, it has always been considered that further pregnancy was impossible, and no case where this has occurred appears to have been published It is therefore of interest to record a case where a deliberate attempt to produce pregnancy in a patient with superinvolution has been successful The earlier history of this patient has been briefly summarised as case 5 in a previous publication (Sheehan and Murdoch 1938b), but fuller details will be given here in view of the significance of the case.

CASE-RECORD

History.—Present age 34. No previous illnesses except appendicectomy when she was a girl. Earlier menstrual history normal. At 24, 26, and 27 she had spontaneous deliveries following full-time pregnancies, without any complications during either the pregnancy or puerperium; there was ordinary lactation for a week or two each time. Normal menstruation recommenced about two months after these deliveries, and her general health was always good.

At 29 she had a twin pregnancy with spontaneous delivery at term A few minutes after the birth of the children she became unconscious and did not recover until a long time after delivery of the placenta Exact details of this collapse are lacking, but it was presumably due to obstetric shock or a severe postpartum hæmorrhage. There was no lactation or swelling of the breasts during the puerperium; there were symptoms suggesting a mild puerperal sepsis, and she remained in bed for three weeks After this delivery there developed certain signs and symptoms which are typical of the anterior-pituitary insufficiency that results from postpartum necrosis of a great part of this gland. From what is already known of the pathology of this subject (Sheehan 1937) it can be asserted with reasonable certainty that such a necrosis did in fact result from the postpartum collapse. As is not uncommon, the insufficiency was greater in some aspects than in others. There was complete absence of menstruation or of molimina, apart from one slight vaginal bleeding which was rather painful and lasted only a few hours; this bleeding occurred nine months after the delivery and may have been due to the trauma of a coitus Typical menopausal flushings of the face occurred at short intervals for about two years Nearly all the hair was lost in the axillæ and on the mons, though it remained on the labia. Dyspareunia developed in the upper vagina, becoming gradually more severe There was definite physical weakness, which began to improve spontaneously six months post partum and was almost gone a year later. She became very sensitive to cold so that she could never keep warm despite extra clothes, and there was dryness of the skin, with absence of perspiration even in the axillæ. The skin showed some scaliness, quite noticeable on the legs. She had also some flatulence and aching in the left hypochondrium. The weight, appetite, and thirst remained unchanged There was no mental deterioration or loss of sleep, and the libido, which had always been slight, was unaltered. Coitus continued at about normal intervals and without any contraceptive measures

Examination.—At 32 she first came under observation She appeared well nourished and showed no premature ageing or obvious pallor. There was very little hair in the axillæ or on the mons veneris The external genitalia resembled those of a senile woman The vagina was shrunken and narrow, its epithelium contained no glycogen and stained only yellow with iodine; its secretion was scanty, with a pH of 7–8, and showed no Doderlein bacilli. The cervix was extremely small and felt like a little dimple high in the vaginal vault. It was not possible to feel the uterus with any certainty on bimanual examination. and the adnexæ were not palpable. Vaginal examination caused some pain to the patient. Measurements of the uterus with a sound gave a length of 1¼ in.: radiography with Lipiodol indicated that the cervical canal was about ¾ in long, and that the cavity of the uterine body was ¾ in. long from fundus to internal os and ¾ in. wide at the openings of the tubes. The tubes were patent and of normal dimensions. The blood-count was 3,000,000 red blood-cells and 5200 leucocytes per c.mm. Sugar-tolerance tests on two occasions with 50 g. of glucose by mouth showed an almost flat curve, with a maximal rise of 10 mg. per 100 c cm. in one test and of 20 mg. in the other.

Treatment was begun 3¾ years after the onset of symptoms Over a period of 3½ months injections of a commercial extract made from the anterior pituitary were given. This seemed to produce slight leucorrhœa, but the genitalia remained unchanged, and the general condition of the patient was not affected.

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* With the aid of the Robert Jardine research scholarship

After this she was given injections of Progynon B oleosum 50,000 international benzoate units (I B U) every 2–3 days for five weeks (total 101 mg dihydroxy-œstrin benzoate in 15 doses). This caused some increase of the leucorrhœa and some lower abdominal pain, 5 days after stopping the injections there was a slight vaginal bleeding lasting only a few hours and clearly related to the withdrawal of œstrogenic hormone. She was not examined until three weeks later, at this time the vagina and vulva did not show any remaining evidence of œstrin stimulation though for a month the uterus and cervix felt very slightly larger than before.

For the next four months she was left without treatment. The amenorrhœa continued and the physical signs of superinvolution remained exactly as they were before treatment, but there was slight growth of axillary and pubic hair, and the sensitivity to cold was rather less.

Meanwhile a study had been made of the beneficial effects of subsequent pregnancy in patients with similar lesions of the pituitary which had not caused superinvolution. It was therefore decided to try to induce a pregnancy in the present case. The method proposed was first to produce and maintain with appropriate hormones a premenstrual condition of the uterus and endometrium, then to stimulate follicle production in the ovaries, and at this stage to provide opportunities for fertilisation of any ova which might be produced. This treatment was begun 4½ years after the onset of superinvolution.

The details of the treatment are as follows, the dosage was experimental. (*a*) For 37 days, injections of progynon B oleosum forte 50,000 I B U every two days (total 127 mg dihydroxy-œstrin benzoate divided into 19 doses). (*b*) From the 21st to the 37th day of treatment with progynon she was also given injections of Proluton 5 mg every two days (total 45 mg in 9 doses). (*c*) From the 26th to the 32nd day of treatment with progynon she was given, besides the progynon and proluton, daily injections of 100 mouse units of Antex Leo (total 700 mouse units in 7 doses). (*d*) From the 20th day of treatment with progynon onwards she was instructed to have coitus as frequently as possible.

Effects of treatment.—The general purpose of the treatment was rather disturbed by an unexpected and undesired uterine hæmorrhage, which began on the 31st day of treatment and continued for almost a fortnight. For the first four days clots were passed and the bleeding was heavy, after this it gradually faded away. There was no pain and no menstrual molimina.

On the 41st day after beginning the treatment she was examined. The pubic hair appeared rather thicker. The vulva appeared normal and had entirely lost its previous senile appearances. The vagina was large, and its epithelium showed a very well marked glycogen reaction with iodine. The secretion had a pH of about 7, but this was affected by the continuation of the uterine hæmorrhage. The cervix had the ordinary size and shape of a multiparous cervix. The uterus was also enlarged and slightly retroverted but did not appear to have undergone relatively as great a hypertrophy as the cervix. There was no pain on examination, and the patient said that the dyspareunia had gone. The finding of such obvious changes so soon after the end of the treatment can be ascribed to the remaining influence of the œstrogenic hormone which had been given. The reason for the uterine hæmorrhage was not clear, it began and continued during the treatment and seemed to have been initiated by the follicle stimulating hormone. However, it was hoped that the effect of the follicle-stimulating hormone would continue for some time longer, and that the effect of the œstrogenic hormone would not be lost too rapidly. So, as the hæmorrhage was becoming very slight, she was instructed to continue frequent coitus for another few weeks.

There was no subsequent hæmorrhage or other symptom, but about six weeks after finishing the course of injections she became pregnant (the date of conception is calculated from the subsequent course). She had morning sickness from the 8th to the 18th week of gestation, Friedman tests at 10 and 11 weeks were strongly positive, and fœtal movements were felt from the 18th week onwards. At 14 weeks she had very slight vaginal bleeding, which followed coitus and lasted two days. Otherwise the pregnancy continued normally. The vagina and vulva retained their healthy functional appearance, and the vagina continued to give a strong glycogen reaction. By the middle of pregnancy the pubic and axillary hair were quite thick and the axillary perspiration had returned. The patient felt perfectly well and did not complain of cold or weakness. The blood-pressure varied from 97/75 to 120/80, the temperature, pulse, and urine were normal. From about 37 weeks onwards there was a continuous slight flow of milk from both nipples.

When the pregnancy was calculated to have reached 39 weeks, labour was induced by puncture of the membranes, for it was desired to avoid dystocia (two of her previous babies had been unduly large). Labour pains were regular and normal, and after thirteen hours she was delivered spontaneously of a live female child, weighing 7½ lb and quite healthy. The placenta, which weighed 1¼ lb, was delivered spontaneously twenty minutes later, with no significant hæmorrhage. The puerperium was uneventful, except that the breasts did not show the normal engorgement at the fourth day and never secreted more than 100 c cm. of milk daily. It is hoped that, as a result of the pregnancy, the patient's pituitary will remain sufficiently active to maintain full health and allow the re-establishment of menstruation.

DISCUSSION

The question that arises is whether the pregnancy began spontaneously, was caused by the gonadotropic hormone, or was caused by the œstrogenic hormone.

The endocrine function of the ovaries was apparently in complete and permanent abeyance; acting as her own test animal, the patient gave no indication of œstrin production, and the superinvolution affected the entire genital tract. This was presumably associated with an absence of follicular development or ovulation. Although there had been some remission of the general symptoms of hypopituitarism before the final treatment, there was not the slightest sign of any recommencing function of the ovaries. It does not therefore appear satisfactory to regard the development of the pregnancy at this time as purely accidental.

The explanation which appears most probably correct is that the extract of pregnant mare serum stimulated the development of follicles in the ovaries, that the resultant production of œstrin maintained the hypertrophy of the genital tract previously produced by the injected œstrin, and that the rupture of one of the artificially stimulated follicles liberated the ovum, which was fertilised. The time-lag of about seven weeks is rather surprising for it is usually considered that the gonadotropic hormone produces its effects more rapidly. The previous atrophic condition of the ovary, and the time required to produce an ovum with complete potentialities, may be factors of importance in this connexion.

The third possibility, which cannot be entirely disregarded, is that the injected œstrin acted in the same way as a pregnancy, producing hypertrophy of the remaining portion of the anterior pituitary, that this was followed by increased functional activity of the pituitary, and that this in turn caused the functional stimulation of the ovary. This explanation, however, is not supported by the results of œstrin therapy on other patients of this type.

SUMMARY

A case is recorded of a patient who had complete superinvolution of the uterus, and other related symptoms, as a result of a postpartum necrosis of the anterior pituitary four and a half years previously. Patients with such lesions of the pituitary who have not developed superinvolution are greatly benefited by subsequent pregnancy; so hormone therapy was instituted in the present case to enable pregnancy to occur Pregnancy began six weeks later and the delivery was normal.

Our thanks are due to Dr. E. M. McKendrick, late house-surgeon in the Glasgow Royal Maternity and Women's Hospital, who assisted greatly in the treatment.

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A RAPID TUBERCULIN TEST*

By Halliday Sutherland, M D. Edin

In most textbooks and in my "Tuberculin Handbook" (1936) the statement is made that 6–48 hours after the cutaneous tuberculin test a positive reaction is shown by a round, raised, reddened, indurated macule, surrounded by erythematous skin, that the reaction reaches its height within 3 or 4 days, and that the patient should be seen 24, 48 and 72 hours after the test A fortnight ago I was testing a case of hay-fever for sensitivity to pollen extract, using the dermal "prick" reaction, and saw the white weal appear in 5 minutes Later I wondered why the cutaneous reaction to tuberculin should be delayed for 6 hours, and remembered the injunction of John Hunter "Why think?—Try." So I tried the cutaneous prick test with tuberculin on patients with tubercle bacilli in the sputum, and found that a white weal easily recognisable and measuring about five millimetres in circumference appeared within 5 minutes, and next day became the reddened macule indicative of a positive cutaneous test.

The technique is simple. The skin on the front of the forearm is cleansed with industrial spirit and then dried. A drop of carbol-normal-saline is placed on the skin and a few centimetres away a drop of undiluted tuberculin. For this purpose I use Tuberculin Albumin Free because it contains no foreign proteins except the protein of the tubercle bacillus. The skin is stretched with the thumb and fingers of the left hand, and the cuticle first under the drop of normal saline and then under the drop of tuberculin is pricked with a hypodermic needle (size 8). The operator should have the sensation of sticking a pin into a blotting-pad so that only the upper layer of the blotting-paper is punctured, and that is a useful method of acquiring the right degree of touch Blood should never flow, for this would wash the tuberculin out of the cuticle, but a pin-head of blood in the needle track does not interfere with the test. The saline and tuberculin are wiped off with dry cotton-wool as sufficient tuberculin has been carried down to the cutis vera on the point of the needle. Normal saline is the negative control, and if any weal appears around this puncture the weal is due to dermographia In that event it is necessary to wait until the reddened macule has or has not developed at the site of the tuberculin puncture

The cutaneous tuberculin test has at least one advantage over the intracutaneous—namely, that only one test is made, whereas by Mantoux's method at least two tests are needed to establish a negative reaction. In the hands of an experienced worker both tests are equally delicate The "rapid tuberculin test" is, I think, an advance in clinical medicine because it allows the physician to determine at one consultation whether the patient is positive or negative, and if it is used in epidemiological surveys concerning the distribution of tuberculous infection in the community each batch of subjects need only be seen once.

BACILLUS PYOCYANEUS INFECTIONS

A CASE TREATED WITH SULPHANILAMIDE

By W. Stewart, M D. Glasg.
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T. Bates, M.B. Lond., F R C.S.
SENIOR SURGEON TO THE INFIRMARY

The effects of infection with *Bacillus pyocyaneus* are usually regarded as fairly mild, but severe results have been recorded. Thus Fish and others (1937) describe a fatal case of acute endocarditis due to this organism after prostatectomy, and Kearns (1936) describes another following cutaneous infection of the forearm in a drug-addict A woman reported by Rolly (1906) died after a typhoid-like septicæmia lasting 11 days, during which *B. pyocyaneus* was grown from both her blood and cerebrospinal fluid The post-mortem examination showed meningitis and bacterial endocarditis with multiple abscesses in the spleen and kidneys. Ewell (1936) describes a case of *B. pyocyaneus* bacteræmia secondary to a pyelonephritis and prostatic abscess which ended fatally after a rather chronic course Nich (1936) reports seven cases of systemic infection with pyocyaneus in the east In several of these maculopapular or vesicular skin eruptions appeared on the 5th, 8th or 11th day and pyocyaneus could sometimes be recovered from the skin-lesions The duration of fever was about a fortnight and the symptoms

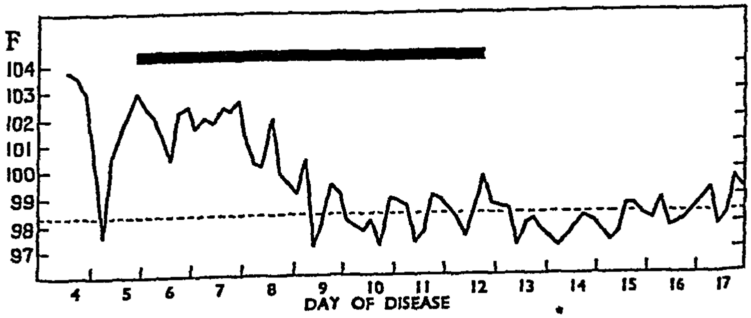

Chart showing fall of temperature during administration of sulphanilamide (thick line) simulated the typhoid dysentery group Three of the cases showed leucopenia and one developed agranulocytosis Only one recovered According to Nieh the bacillus has also been found in epidemic gastro enteritis and has been isolated from polluted wells

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* Extract from an address on tuberculin in diagnosis and treatment given to the Listerian Society at King's College Hospital medical school on March 1, 1939

The sulphanilamide drugs have been used successfully in urinary infections with the allied typhoid organisms (Barer 1937) and *B coli* (Kenny et al 1937) and Soeters (1937) in Holland reports the case of a child with a *B pyocyaneus* septicæmia who recovered with Prontosil soluble and blood transfusions The case reported here, however, appears to be the first in which a *B pyocyaneus* infection has been treated with sulphanilamide in this country

CASE RECORD

The patient was a rather frail woman of 55, the wife of a farmer She was admitted with symptoms suggesting infection with the typhoid paratyphoid group Three days before admission there had been shivering accompanied by pain in the back, considerable weakness and headache On admission toxæmia was very pronounced and her temperature was 104 6° F There was no enlargement of the spleen and no abdominal tenderness or rash She was passing 10–12 dysenteric motions a day, and complained of severe headache and profuse perspiration especially at night Her previous history was negative except for a slight attack of puerperal sepsis several years ago Blood-count hæmoglobin 77 per cent, red cells 4,100,000 per c mm, white cells 3800 per c mm, polymorphs 79 per cent, lymphocytes 15 per cent, monocytes 3 per cent, basophils 1 per cent, metamyelocytes 2 per cent Widal reaction negative to typhosus O and H and paratyphoid A, B and C No agglutination with *Brucella abortus* The result was similar five days later Blood-cultures, aerobic and anaerobic, were negative Cultures of the fæces gave *B coli* and *B pyocyaneus* Cultures of the urine gave *B coli*, *Streptococcus fœcalis* and *B pyocyaneus* The patient's serum agglutinated the pyocyaneus isolated in dilutions up to 1 in 50 and (very slightly) 1 in 125

No specific treatment was given for the first two days after her admission Streptocide (Evans) was then given in doses of 1 gramme two hourly for the first thirty-six hours and then 3 g spread over the twenty-four hours for the next four days On the day after treatment began the temperature and pulse-rate began to drop and they reached normal four days later (see chart) There was a slight rise in temperature five days after stopping the sulphanilamide but clinical improvement continued Ten days after admission the *B pyocyaneus* had disappeared from the fæces and the urine contained only large numbers of streptococci

The *B pyocyaneus* isolated produced the green colour on agar, it was motile, liquefied gelatin, and produced acid in glucose but no fermentation in lactose, mannite, saccharose, inulin or maltose

Attempts were made to assess the value of streptocide treatment in mice injected with cultures of the *B pyocyaneus* isolated As this organism is relatively avirulent about 300 million had to be given to produce a fatal result In a first experiment the mice not given streptocide died on the first and second days after injections from a septicæmia in which the bacteria could be easily cultured from the heart blood and spleen, while most of the mice given streptocide survived These results were by no means constant in repeat experiments Several of the batches that were given the cultures without streptocide seemed to suffer from no deleterious effects or only showed a transient roughening of the hair It was clear that with a bacillus varying so much in virulence no accurate conclusions could be drawn

SUMMARY

Infection with *B pyocyaneus* is usually mild, but the organism may produce a septicæmia resembling typhoid that is often fatal

A middle aged woman with diarrhœa and severe toxæmia, in whom *B pyocyaneus* was grown from the urine and fæces and whose serum agglutinated the organism, recovered after injections of sulphanilamide

Attempts to assess the value of sulphanilamide in experimental infection with pyocyaneus in mice were inconclusive owing to great variations in virulence

We are indebted to Mr G F Home, the librarian of the Royal Society of Medicine, for his assistance and coöperation

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VENOUS HUM IN BILHARZIAL CIRRHOSIS OF THE LIVER

By M R Kenawy, M D Cairo, M R C P
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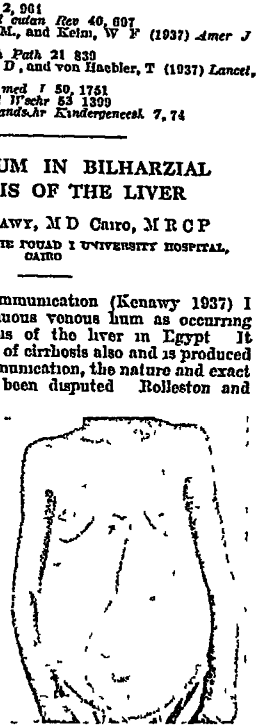
In a previous communication (Kenawy 1937) I described the continuous venous hum as occurring in bilharzial cirrhosis of the liver in Egypt It occurs in other types of cirrhosis also and is produced by some venous communication, the nature and exact site of which have been disputed Rolleston and McNee (1929) ascribe it to dilatation of the coronary vein or to a dilated communication between the internal mammary vein and radicles of the portal vein Sir Arthur Hall (1937) described post mortem findings in a case in which the left portal vein was much dilated and communicated by a circuitous course through the round and falciform ligaments with the right internal mammary vein, which had varicose dilatations Bates (1937) believed that the bruit was caused by stenosis of the inferior vena cava by "a perivenous hepatic fibrosis"



Bilharzial cirrhosis of the liver, showing ascites, enlargement of spleen, and elevation of skin (marked by arrow) at the site of the thrill and venous hum.

The venous hum is usually heard over a localised area over or just below the xiphoid process of the sternum It is continuous and is accentuated by deep inspiration. Further clinical observations on two cases have brought out the following points: (1) Over the site of the hum and in a strictly localised area a continuous thrill could be felt, especially on applying very lightly the tip of one finger; (2) careful inspection of the site of the thrill showed an elevation of the skin (see arrow in figure), which is probably due to an underlying vein; (3) when light pressure was applied over the elevation, the thrill disappeared; and (4) when the stethoscope was applied to the xiphoid process and the hum listened to, the application of light pressure over the site of the thrill caused the hum to disappear. When the pressure was released the hum returned

The following is a brief account of the two illustrative cases.—

CASE 1.—A woman, aged 40, gave a history of dysenteric symptoms two years ago, followed by aching discomfort in the left side and gradual swelling of the abdomen. Examination showed emaciation and abdominal distension. The spleen was enlarged down to the iliac fossa and the hypogastrium. The liver was felt four fingers below the costal margin, and ascites was present (see figure) A blood-count *showed*:—

Red cells	3,340,000	Polymorphs .. .	49%
White cells .	1400	Lymphocytes .	28%
Hæmoglobin .	56%	Hyalines .. .	15%
Colour-index ..	0·85	Basophils ..	3%
		Eosinophils . ..	5%

The blood was negative for malaria, and the Wassermann reaction was negative. A fractional test-meal showed hypochlorhydria. Examination of the stools was negative for parasitic ova. Sigmoidoscopy revealed no abnormality. Heart and lungs were normal

CASE 2.—A girl, aged 12, complained of abdominal discomfort and dyspepsia for a year. The spleen was a handbreadth below the costal margin, and the liver three fingers. There was no ascites A blood-count showed:—

Red cells	3,000,000	Polymorphs .. .	56%
White cells ..	3600	Lymphocytes ..	26%
Hæmoglobin .	50%	Hyalines	3%
Colour-index ..	0·8	Eosinophils	15%

There were no malarial parasites, and the Wassermann reaction was negative. Examination of the stools was negative for ova. There was no cardiovascular abnormality, and the lungs were free.

The above observations prove beyond doubt the superficial nature of the venous hum in cirrhosis of the liver and exclude the possibility of stenosis of the inferior vena cava The superficial venous communication responsible for the hum must be constricted somewhere during its course; hence the thrill and the roaring sound It is possible that the constriction takes place at the linea alba or possibly at the diaphragm In certain cases the hum is heard near or above the umbilicus, and in those cases the constriction must take place at the linea alba The above case-records show that there is no relation between the hum and the degree of splenic enlargement, but its presence indicates a collateral anastomosis between the portal and systemic circulation. The hum is seldom met with and hitherto has been only of academic interest

I must record my grateful thanks to Dr. M. Erfan Bey, professor of tropical medicine in the Fouad I University, in whose beds these cases were investigated.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

AT a meeting of this section held on March 28 the chair was taken by the president, Dr. E. LETHEBY TIDY, and a discussion on recent advances in the

Treatment of Pneumonia

was opened by Dr. L. E H. WHITBY. He said that the original experimental work on mice with M & B 693 had been confirmed beyond doubt, and its activity in vivo had been confirmed in vitro by A Fleming and his colleagues with thirty types of pneumococcus Sensitivity varied with strains rather than with types and depended upon the phase of the organism, the age of the culture and the degree of virulence. In clinical practice M & B. 693 was most dramatically effective in acute infection; in chronic and long-standing cases of bronchitis its action might be very slight The results of G M Evans and W. F Gaisford, which had been amply confirmed, showed that the drug was not influenced by type and that if the patient lived for twenty-four hours and retained some 5 g the chance of success was greatly increased, irrespective of the day of the disease on which treatment was commenced. These requirements were in strong contrast to those of serum therapy.

The drug should therefore be the first line of attack in lobar pneumonia Whether passive immunisation with serum or active immunisation with vaccine should be combined with it was difficult to decide The results of the combined treatment were better in animals than those of either treatment alone, but in clinical practice, by the time the type had been determined or the vaccine made, the first 24 hours of dosage with the drug would have given some indication of its efficacy and the combined method could be employed if the clinician thought fit The scheme of dosage suggested by Evans and Gaisford had given good results: 4–5 g in the first 24 hours followed by 3 g daily up to a total dosage of 25 g The drug, being insoluble, was not absorbed to the same extent by different persons In some cases as good a result was obtained with a blood concentration of 1–3 mg per 100 c cm as with 10–18 mg per 100 c cm. This finding suggested that for certain patients a lower dosage than 25 g. might be used, and that estimations of blood concentration would probably be an essential part of the control of treatment. Patients treated on the 5th day and afterwards required no more than 15 g. to bring about a crisis and cure In the few places where sufficient clinical material was available, Dr Whitby pressed for complete laboratory control and investigation It would be important to determine the fatality-rate in bacteræmic cases, because the prognosis depended rather on bacteræmia than on type. Daily controls of blood concentration should be made, first to obtain more information on the minimal blood concentration, and secondly to determine whether failures were due to poor absorption of the drug rather than to insensitivity of the strain. The drug existed in the blood partly in an active unchanged form and partly in an inactive acetylated form The proportion varied in different patients, and those who acetylated the drug readily might be those who resisted treatment Administration should be continued for about 5 days even though the temperature dropped, for premature discontinuation was always associated with an exacerbation Better results were obtained with a sustained minimal concentration than with an intermittent maximal one, and therefore with small doses at short intervals A large dose merely maintained the blood level for a longer time There was a quantitative relationship between concentration in vitro and the number of bacteria that could be destroyed Animals, however, required almost as large a dose to counteract a small inoculum as a large one Mild infections required almost the same dose as did acute and fulminating ones

The basic indications for the drug were definite coccal infections It had no action on influenza Its chief disadvantage was that in about 30 per cent of patients it set up gastric irritation and vomiting which was sometimes severe This often subsided after 24 hours, and to tide the patient over this period the method of administration of the drug could be varied Search had therefore been made for an injectable compound, and particular attention had been paid to the soluble sodium salt sodium 2 sulphanilyl aminopyridine (837) This had a hydrogen ion concentration of about 11, but when suitably diluted (1 g in 20 c cm) could be given intravenously In 2 per cent dilution it was suitable for rectal administration It was rapidly excreted, and injections were necessary by night as well as by day in order to maintain an effective concentration The best dosage would have to be carefully worked out Multiple small injections would probably be necessary, and its main use would be in the first 24 hours

Dr G J LANGLEY reported on clinical trials in a series of cases treated in the emergency ward of a hospital in Salford They were all in the age-group between 16 and 60 Serum had been given to all patients admitted before the end of the 3rd day who showed the presence of a pneumococcus type I or type II Patients admitted after the 3rd day had been used as a control series The average difference in the duration of the disease before admission in these two groups was 2½ days, and the life saving value of this difference remained to be estimated If alternate cases had been made controls, the number of cases treated would have been too small The drug had been tried in 34 patients, of whom 3 had died It was striking that whereas in the past eight years 9 cases of type III pneumonia had all died, 3 recent cases treated with M & B 693 had all recovered These had been the first recoveries from infections with this type that he had ever seen Unless the higher type pneumonias could be studied under expectant treatment, it would remain impossible to judge of the effect of any remedy It would be necessary to study some 2000 cases before the course of any type could be established in 100 cases It had been shown in the past that an attack of pneumonia left the patient a carrier for a month, recovery of the organism becoming more and more difficult with the lapse of time He was anxious to know whether treatment with the drug had any effect on recovery of the organism from the sputum If the pneumococcus was made to disappear, bacteriological diagnosis would become impossible The type of statistical criticism to which serum work was subjected in the United States would be called for in assessing the results of treatment with the drug

Dr W F GAISFORD summarised the results of a year's experience with M & B 693 on a series of between 600 and 700 patients at Dudley Road Hospital, Birmingham Of these, 400 had been *cases of lobar pneumonia* Every *patient* over five years of age who had a minimum of 3 g of the drug was included, except those dying within 12 hours of admission The total mortality had dropped from about 23 per cent to between 6 and 7 per cent The mortality in patients over fifty had dropped from 50 per cent to 24 per cent, and in patients under fifty from 17 per cent to 1 6 per cent Temperature had returned to normal within 48 hours of beginning treatment with the drug Continuance of pyrexia after a drop had indicated either a complication or an organism that was not a pneumococcus There seemed to be no alteration in the rate of resolution—in some cases, in fact, this appeared to be delayed A rapid improvement in the general condition took place after the fall in temperature The mental depression characteristic of the sulphanilamide group had been observed in a number of cases but persisted only for a short time Complications included empyemas of various origins, four cases of clear sterile effusion, and an effusion in a type XVII pneumonia Complications due to the drug itself had been mild only A number of rashes had been seen, similar to those caused by sulphanilamide but less severe In allergic patients these rashes had become frankly urticarial, they had been independent of the dosage and had disappeared in a few days Cyanosis had been observed but had ceased to cause anxiety An existing cyanosis was not a contra-indication to the use of the drug Very young patients did not vomit, but in adults this complication was important It often depended upon gastritis and its origin was not central If a patient vomited, the next dose should be given by a different route Vomiting was, however, rarely so persistent as to prevent a sufficient dose from being retained As far as could be judged, intravenous injections of the sodium salt had not been satisfactory, but intramuscular injections had been efficacious and had caused no reaction He had found it best when using M & B 693 to saturate the system in the first hours and then give a sedative to allow the patient to rest

DISCUSSION

Prof A FLEMING observed that M & B 693 did not seem to kill the pneumococcus which must presumably be killed by the natural defences of the body It would therefore seem desirable to increase those defences as much as possible The fatality rate might be still further reduced if patients were immunised when the drug was given The results in animals of combining serum or vaccine treatment with M & B 693 or sulphanilamide had been considerably better than those of either method alone and he wished that some clinician would try the effect of combining vaccine treatment with the drug It was true that time was short, but the extent of immunity required to influence the result was small The pneumococcus might perhaps develop a fastness to the drug, as some published results (*Lancet*, March 11 1939, p 562) had seemed to show A medical officer had sent two cultures of pneumococcus by air from New Guinea, and both had been alive on receipt They had been taken from a patient with pneumonia type I, the first before treatment with the drug and the second after death They had shown an enormous difference in sensitivity, the second appearing to be quite resistant The difference suggested a reason why some patients did not respond to the drug.

Mr. A J EWINS, D.Sc, reminded the section of the vast amount of work which went to the elaboration of a drug of this kind The chemical side involved the synthesis of a number of drugs and their assessment was very arduous, most of the work being without visible success

The PRESIDENT observed that Dr Ewins was responsible for the active chemical work of the preparation of M. & B 693

Dr H S BANKS said that he and his colleagues at Park Hospital had typed about 30 cases of pneumonia in the last few months. He had been impressed by the absence of deaths among cases treated with the drug, although these had nearly all been middle-aged patients and really bad lives There had been a fair proportion of empyemas The concentration of the drug in the pus was often considerably higher than in the blood The sodium salt had often been injected into the pleural cavity and the titre of the drug in the pus raised to a very high figure—over 100 mg. per 100 c cm. The loss of sensitivity by the organism might have a bearing on this fact The sodium salt had been valuable in cases of vomiting and accounts of its toxicity seemed to have been exaggerated. A very low concentration produced by it in the blood and cerebrospinal fluid had been effective against the pneumococcus

Dr. WINSNES (Bergen) spoke of the interest of the work on this drug, which he had come over specially to see

Lieut-Colonel C. H BARBER said that he had seen excellent results from vaccine treatment of a small series of lobar pneumonia cases many years ago. Resolution had, however, not taken place any sooner He hoped the combined method would be investigated fully.

Dr MAURICE DAVIDSON said he had been disturbed by the indiscriminate way in which the sulphanilamide drugs had been used by junior members of the profession. No one was yet in a position to say whether or not they had any damaging effects upon the body A drug which was sufficiently potent to kill a virulent organism might be capable of damaging the renal epithelium or even the myocardium

Dr. ELI DAVIS described a rash of a scarlatiniform type which had appeared on the sixth day after treatment with the drug had been begun on a child aged 16 months; it had become morbilliform and had spread all over the body and face and inside the mouth, making the child more critically ill than if he had had pneumonia It had been treated with 1 per cent. gentian-violet.

The PRESIDENT pointed out that pneumonia developed much more slowly in older patients, and diagnosis was apt to be delayed Such patients often suffered from a condition now termed pneumonitis, which might or might not develop into lobar pneumonia If empyema developed more commonly in patients who had been successfully treated with the drug, this would provide an argument in favour of the use of vaccine. The question whether the drug killed the pneumococcus or whether the lung resolved was unimportant; what mattered was whether the patient was going to live. The responsibility for the wild use of these drugs in general practice lay with the travellers of the firms Enough time had passed to show that the drug would not cause agranulocytosis or pernicious anæmia.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held in Sheffield on March 10 a discussion on

A.R.P. in Relation to Maternity Work

was introduced by the president, Prof FARQUHAR MURRAY (Newcastle) He had studied the problems that would arise in the evacuation and treatment of obstetric cases in the area served by the Princess Mary Maternity Hospital in Newcastle The ordinary routine would certainly have to be modified in an emergency, but the decision to allow a patient to be sent home would have to be based on reasonable medical grounds and provision must be made for her future needs He had made a test evacuation of the hospital and another after six weeks, noting which cases could be sent home, what form of transport would be necessary (ambulances or private cars) and whether the patient was to be discharged to the hospital district or outside it The two tests gave very similar results: taken together they showed that of 82 cases in hospital, 69 could be evacuated and 13—with heart disease, toxæmia, puerperal infections, or cæsarean section—would have to be retained Normal cases could be sent home 24 hours after delivery. About half the cases could be sent home by car, the others by ambulance. The medical officers of health of the various areas concerned would accept responsibility for domiciliary care by county or municipal midwives of booked cases which could not be admitted It would be necessary to provide transport and equipment for the extra confinements and nursing undertaken on the hospital's own district, which could of course be enlarged. Removal of the whole hospital and its services to any new area would be unsound as it would be unreasonable to expect women to leave their families just because they were pregnant. The President's main contention was that a diffusion both of patients and of the necessary hospital services would be necessary.

Dr ARTHUR GEMMELL (Liverpool) suggested that the two desiderata of keeping gravid women with their families and yet providing hospital facilities for them could be obtained by the registration of pregnancy, the interchange of information between local authorities, and the allocation of "school groups" of children and their parents to definite places in the reception areas. Existing hospitals or houses in these areas could be set aside as maternity units and extra obstetrical personnel could be supplied there. Some arrangements would have to be made for maternity beds and district midwifery in the dangerous areas

Dr. V T THIERENS (M O H Blackburn) suggested that the larger maternity units should be moved to existing or improvised outer-zone maternity hospitals, affiliated to one another, and administered in each region by one central coördinating body responsible for the distribution of staff, patients and equipment In the Blackburn area he had estimated that in a state of emergency about 6 per cent of births would still require hospitalisation Dr Thierens opposed the scattering of midwifery services into numerous small and separated units.

Mr. ALFRED GOUGH (Leeds) was strongly in favour of the evacuation of pregnant women from the danger zones and provision of multiple small homes with some larger ones offering a more complete obstetrical service

Prof. DANIEL DOUGAL (Manchester) suggested the appointment of a regional obstetrical officer with complete control of personnel and equipment.

Mr T F Todd (Manchester) and Dr H Burton (Manchester) described a technique for

Spinal Analgesia in Labour

Dr Burton said that an injection of about 9 minims of a heavy 10 5 per cent solution of Percaine was given to the patient in the sitting position and she was kept in this position for 15 minutes The method was reserved for the second stage Subjective pains were relieved within 15 minutes, and involuntary bearing down was abolished , a saddle anæsthesia and paralysis of the muscles of the outlet rendered delivery very easy Of 60 primigravida given this treatment 50 delivered themselves spontaneously , 10 required low forceps Labour was slightly prolonged but without ill effects The prolongation was mainly due to the absence of involuntary bearing down , the patients had to be told when to strain The method seemed particularly applicable to cases of heart disease owing to suppression of muscular effort

Mr Todd discussed the theoretical aspects of spinal analgesia in labour He hoped and believed it would be possible to devise a really selective spinal anæsthetic technique , no other method left the patient conscious and coöperative

Prof Miles Phillips (Sheffield) showed an enormous simple papillomatous ovarian cyst removed many years after a laparotomy at which the condition was regarded as hopelessly malignant

REVIEWS AND NOTICES OF BOOKS

Control of the Circulation of the Blood

By R J S McDowall, M D , D Sc , professor of physiology, University of London, King's College , with the assistance of G E Malcolmson, M D , Lt -Col I M S (ret), and I McWhan London Longmans, Green and Co 1938 Pp 619 73s 6*d*

Abraham Lincoln is said to have retorted to a well meant inquiry as to what he was reading that he was not reading, he was studying If the reader is not a student of the circulation when he starts Prof McDowall's book, he will be by the time he has finished It is no discredit to the author to say that it is an achievement to have read it The book has been written for serious use rather than mere instruction It furnishes a most complete compilation of information about the circulation, and the enthusiasm of the author for his subject has been almost completely sublimated into the effort to compress his matter into a reasonable space His method of presenting it is partly historical and partly that of building up evidence in relation to the various facets of the problems discussed Only those who have tried to do this even on a small scale will realise how skilfully the findings of numerous investigators have been combined so as to provide a consecutive account

The style is informal, and the dignity of authority pleasantly absent No book is nowadays complete without illustrations, and the problem of which to select from the 7000 original works quoted has been neatly solved by using only those from the author's own laboratory In one or two places known facts have been summarised in the form of tables convenient for quick reference The most impressive part of the book is the bibliography, which contains an unusual feature—a brief note after each reference indicating the subject with which it deals The reader will inevitably be surprised—and perhaps a little chastened—when he learns of the early date at which some phenomena were first noticed The mass of original work cited shows once again that our conceptions depend more on a kind of evolution than on specific discoveries We should have liked to know Prof McDowall's opinion of some of the observers he quotes and of their apparatus and methods, but he has preferred in the space at his disposal to give us access to as much information as possible so that we may ourselves pass judgment

His book is a contribution to the subject which should outlast our generation It consolidates the knowledge so far reached of the physiology of the circulation, and will undoubtedly fulfil his hope that it will enable future workers to increase the more easily the store of knowledge of which they have been the fortunate heirs

Vitamins and Vitamin Deficiencies

Vol I *Introductory and Historical Vitamin B_1 and Beriberi* By Leslie J Harris, Ph D , Sc D Camb , D Sc Manc , F I C nutritional laboratory, Medical Research Council and University of Cambridge London J and A Churchill 1938 Pp 204 8s 6*d*

This is the first of a series of volumes, of which seven are projected by the author, on vitamins and allied factors , the last is to deal with the practical application of the knowledge set out in its predecessors and with dietetics In the production of this series the plan has been first to describe the parts of the map that have been well explored and sharply outlined, in the hope that the regions of which our knowledge is still vague will have become better marked out in the interval As far as vitamin B_1 is concerned, Dr Harris has succeeded well in his object of providing a detailed summing up of the results of modern research, complete with bibliography

The book is really comprehensive but never loses its theme, so that the reader is guided through a well told story, and does not find himself rambling in a disordered maze of facts The book is for the student, and even the advanced student, rather than for the layman , the specialised worker in vitamins will find here the picture of a vast continent which will enable him to learn the principal features of the territory surrounding his own little country

Physical Diagnosis

(12th ed) By Richard C Cabot, M D , professor of clinical medicine emeritus in Harvard University , and F Dennette Adams, M D instructor in medicine in the Harvard Medical School, and associate physician at the Massachusetts General Hospital London Baillière, Tindall and Cox 1938 Pp 816 22s 6*d*

When this work first appeared Dr Cabot deliberately ignored techniques with which he was personally unfamiliar or which he considered useless Now this attitude has been changed on the grounds that "no-one's experience, no matter how varied or extensive, is sufficient to include all that the student of physical diagnosis should know" In the present edition of the book Dr Cabot and his co author strive to present as far as possible "a cross section of the views on diagnosis held by the staff of the Massachusetts General Hospital" This, as might be expected, has necessitated many additions and much rearrangement of material. History-taking, physical examination and the body as a whole are discussed in the opening chapters The later ones deal each with a region of the body, setting out the methods of detecting departures from the normal and assessing their significance. The authors have wisely confined themselves to common or relatively common disorders. The book is amply illustrated with beautiful photographs. We note in passing that the plate illustrating the Sims position shows the patient lying on the right side. The aphoristic style of writing impresses the matter on the memory, and the outstanding features of the work are clarity, thoroughness and common sense. No student who buys it will regret having done so.

Treatment by Manipulation in General and Consulting Practice

(3rd ed.) By A. G. TIMBRELL FISHER, M.B., F.R.C.S., orthopædic surgeon, St. John Clinic, London. London: H. K. Lewis and Co. 1939. Pp. 255. *12s. 6d.*

THIS book is the revised and partly rewritten third edition of Mr. Timbrell Fisher's well-known "Manipulative Surgery." It describes clearly and scientifically the objects of and indications for manipulation as a method of treatment for certain disabilities of joints and their neighbouring structures, and gives with clarity and precision details of the methods employed. The absence of overstatement and the recognition of the limits of the method lend added weight to the claims that are made. Mr. Timbrell Fisher recognises (in a footnote on p. 11) that manipulation is no longer a neglected art but now occupies its rightful place not only in practice but, more important still, in surgical teaching.

As a guide to the scope and limitations of manipulation in treatment this book fills a need that must be felt by every practitioner. The descriptions of the actual performance of manipulative treatment for various conditions, though full and clear, are not in themselves sufficient to ensure success. Really good results depend more on practice and experience in this than in any other branch of surgery.

Personality Development and Social Control

In Terms of Constitution and Culture. By IRA S. WILE, M.S., M.D., New York City. London: Humphrey Milford, Oxford University Press. 1939. Pp 57. *3s 6d*

THIS little book is a reprint of three lectures delivered at the Tavistock Clinic in 1937. The first two, which deal with personality in terms of constitution and in relation to culture, are evidently composed for delivery to an audience of psychological experts. They are phrased in terms which have become familiar to readers of modern works on psychology, but remain rather daunting to others. The average medical reader would have to take some trouble to discover the author's meaning, while the layman unversed in this specialised language would probably not understand it at all. This obscurity is regrettable because although there is nothing strikingly new in what he has to say, Dr Wile is clearly a thinker with a complete grasp of his subject, and has the faculty of stimulating thought in others.

The third lecture, on social control and the prevention of personality disorders, is in a very different category. It is written in plain and vigorous language, and is an appeal to the public conscience. Dr. Wile holds that half the cases of certifiable insanity are preventable and backs up his contention with figures that carry conviction He instances some of the diseases which have once plagued mankind, and are now almost unknown, to give point to his plea for more effort to deal with the causes of insanity at their inception This lecture deserves to reach a larger audience than that which originally heard it and should certainly be read by eugenists and sociologists and indeed all those who take an interest in the mental welfare of the race.

Refraction of the Eye

By ALFRED COWAN, M.D., associate professor of ophthalmology, graduate school of medicine, University of Pennsylvania. London: Henry Kimpton. 1938. Pp. 319 21s.

To many medical practitioners and ophthalmologists interested mainly in the clinical aspects of their specialty the study of optics and refraction is dreary work In his preface the author of this book expresses a desire to arrange his subject so that he who runs may read. His long experience as a teacher in a large postgraduate school has given him an understanding of the needs of both students and practitioners, and his aim has been to show how the clinical application of refraction emerges logically and in orderly sequence from the basic scientific facts of optics This practical approach does much to enliven even the most theoretical sections of the book.

Workbook in Elementary Diagnosis

For Teaching Clinical History Recording and Physical Diagnosis. By LOGAN CLENDENING, professor of clinical medicine, University of Kansas. London: Henry Kimpton. 1938 Pp. 167. *7s. 6d.*

THIS is an entertaining new version of the ABC of history-taking and physical signs It is no pocket-book, for it measures 8¾ by 11¼ in. The author modelled it on the laboratory notebook in physics or chemistry, and he invites the student to record his observations on a patient in such a notebook just as he would a laboratory experiment. (But what laboratory scientist would tell his students to record the size of an object in terms of "an almond, a water-melon, an orange, &c"?) The instructions for making observations are however clearly and spaciously set out and tersely worded. It is all quite sound and simple. At the end are seventy pages of exercises, in which the student is told to do all these things that have been described to him, and is given room for writing his findings. Two features of the book are noteworthy. One is that wherever possible the classical physical signs are given in the words of those who first described them; of pleural friction, for example, "Hippocrates said 'the lung squeaks like a leather strap.'" The other is the illustrations, which are bold line drawings of the style familiar in modern nursery literature. It is an excellent book but somehow we should hesitate to offer it to the English medical student in case he should find it too reminiscent of the kindergarten.

Le duodènum

Atlas de radiologie clinique. By P. COTTENOT, médecin radiologiste de l'Hôpital Broussais, MAX LÉVY, ancien *chef de laboratoire à la Faculté de Médecine*; and ED. CHÉRIGIÉ, assistant de radiologie de l'Hôpital Broussais. Paris: G Doin 1938. Pp. 223. Frs 285.

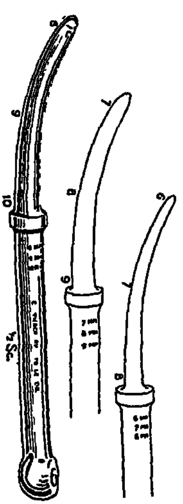
WHENEVER they examine a duodenum the authors of this work take about 8 films of it; in special cases they may increase the number, even up to 20, and when still in doubt they are prepared to repeat the whole examination. In general their diagnosis rests upon interpretation of these series of films rather than upon what is seen by fluoroscopy. They use a Potter-Bucky diaphragm; they take antero posterior or oblique views of patients erect or supine and they sometimes use compression Occasionally they give an intravenous injection of atropine and calcium gluconate to relax a duodenum that is contracted by spasm The results recorded by their technique are set forth in this atlas, which is a very beautiful production, uniform in style with the atlas of the radiology of the colon issued by the same publishers a few years ago It contains some 500 excellent full size reproductions of radiograms of the duodenum, each accompanied by a drawing outlining its significant features as interpreted by the authors Many examples are given of variations in the normal duodenum and also of anatomical anomalies Diverticula, stenosis, deformation from extraduodenal causes and tumours are illustrated, and about half the book is devoted to ulcers and the effects of operations The figures are adequately described but beyond that the text is reduced to a minimum

There is something very satisfying about the precision achieved by this sort of technique in the study of shadows The radiologist establishes the exact position and the approximate size (at least relatively to others in his series) of his ulcer, and can tell whether an œdematous halo surrounds it or not How far all this will give added precision to diagnosis, prognosis, and treatment has yet to be worked out The radiological history of duodenal ulcer is incomplete without examples of the scarred duodenum, deformed by a healed ulcer but without stenosis, such examples are omitted here, probably because the authors restricted their choice, in the sections on ulcer, to cases which had been surgically verified In other respects however the atlas is as full as could be wished

NEW INVENTIONS

IMPROVED UTERINE DILATORS

ALL uterine dilators from Hegar's invention down to the present time have two grave faults The first is their shape, a parallel sided cylinder surmounted by a short cone, which makes their action more in the nature of a burst than a dilatation The second is their unnecessary length apart from the portion that acts as a handle It is to these two mistakes in design that the principal dangers of dilatation of the cervix are due—namely, rupture of the cervix and *perforation of the body of the uterus*



The dilators Messrs Thackray of Leeds have made for us avoid these faults The dilating portion of each one is a much elongated cone regularly tapering from its base to its extremity The diameter of the extremity of dilator No 2 is that of the middle of the dilator No 1 The diameter of the extremity of dilator No 3 is that of the middle of dilator No 2, and so on

The result in use is a true wedge like action The first dilator having been passed and withdrawn, the second passes without resistance until it is half way in, at which distance its halfway diameter exactly corresponds to the amount of dilatation that the base of the first dilator has effected From then onwards until its complete insertion a true stretching force is exercised and as the proximal half of each succeeding dilator passes this stretching is repeated, the process being analogous to the insertion of a series of wedges

The dilating portion (2¾ in long) is joined to a straight handle, and at the junction is a projecting rim which prevents the instrument being passed further than 2¾ in into the uterus, so that perforation is impossible except in the case of a very undersized organ, which should be immediately apparent to the operator when as a preliminary he passes the sound The dilators are made in solid rustless steel and the *dilating portion is curved in the normal curve of the uterus*

These dilators have been in use at Hammersmith Hospital for the best part of a year, and all agree that they are superior to the older instruments They do not rupture the cervix, and it is impossible for them to slip inwards suddenly and perforate the uterine wall, not only because of the projecting rim but because the wedge shape is incompatible with the sudden giving way of resistance, in short, they make the operation both easier and safer

VICTOR BONNEY, M S Lond, F R C S
Visiting gynæcologist, British Postgraduate Medical School and

A COCKCROFT BARKER, M B Edin

NEW COLOSTOMY APPLIANCES

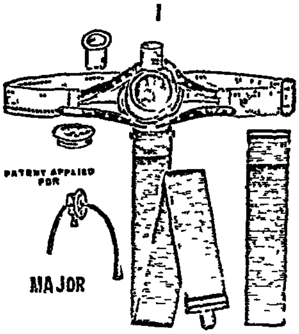
THE lot of the patient with a permanent colostomy opening is not a happy one, whatever his method of dealing with his disability If the cause of the obstruction has been successfully removed, if he secures a thorough daily evacuation by irrigation or by aperients, and if he has acquired, as many do acquire, an efficient sphincter like control of the opening, he is little worse off than ordinary mortals

In carrying out the morning evacuation, however, whether by irrigation or aperients, the following considerations make it almost impossible for the sensitive patient who does not possess special apparatus to stay over-night at a friend's house or at an hotel. (1) The uninterrupted privacy of his own bedroom or of perhaps the only available w c must be secured for anything up to an hour (2) During that time he is concerned solely with the business of the evacuation and cannot even move from his chair (3) The fear of the spread of objectionable odour beyond the limits of his room (4) The need of special accessories, such as a waterproof ground sheet and sanitary pail

These difficulties are almost non existent for the user of the Salisbury Major and Salisbury Minor here described, for as soon as the irrigating fluid has been instilled and the appliance finally adjusted, the patient may walk about, shave, wash and dress At suitable intervals he may leave his room to empty the reservoir of the appliance and flush it through with water, or for any other purpose These appliances have been developed from the one I described two years ago (*Lancet*, 1936, 2 576)

The Salisbury Major (fig 1) consists of a celluloid dome approximately 4 in wide by 2 in deep, with two studs at each side for attaching the belt. In front is a 2¼ in. aperture through which is introduced the irrigation catheter with its large diameter anti-reflux guard. Any leakage finds its way by gravity into the dependent rubber tube reservoir, the bottom end of which is closed securely by a strong letter-clip. When the instillation is completed the aperture is closed by means of a soft rubber bung. The celluloid cap as supplied on the original apparatus has been discarded owing to the impossibility of making an inexpensive cap in that material with a leak-proof fastening. The tubular rubber reservoir is of sufficient capacity to hold the whole evacuation. During the later stages of evacuation, when the full capacity of the reservoir is no longer called for, the spring clip closing its lower end is tied to the belt, thus halving the effective length of the tube and allowing it to be worn folded under the clothes. The apparatus is flushed out at convenient intervals by inserting the spout of a bedroom water-can into the 1¼ in. aperture on the top of the dome. This aperture is provided with a cap.

The Salisbury Minor (fig 2) is a shallower and less bulky edition of the Major. As it has no opening in front it has to be applied to the body after withdrawal of the catheter. This can easily be done with a negligible leakage of practically clear water. This apparatus (unlike the Major) can be used without the detachable Sorbo abdominal cushion ring. Used in this way it is still less conspicuous under the clothes, an advantage for those obliged to wear a protective apparatus all day. It is also an advantage in hot countries where rubber perishes easily, or where replacements are not easily available. On test I found that the Minor when used without the sorbo ring was, at first, unsuitable for cases with a hernia-like protrusion of the colostomy area, as there was no room left in the dome for fæces. Such cases are by no means uncommon. This difficulty has since been overcome by the simple hernia control (fig. 2A). This is a wheel-like contrivance made throughout of ⅛ in. cylindrical celluloid rod and is fitted immediately within the dome where it presses against the abdominal wall. It is held firmly in place against two small celluloid blocks cemented inside the dome. It fulfils its purpose efficiently of controlling the hernia during irrigation or at other times. Further, it is comfortable and does not damage the tissues. It can be fitted by the makers to almost any type of colostomy cup.



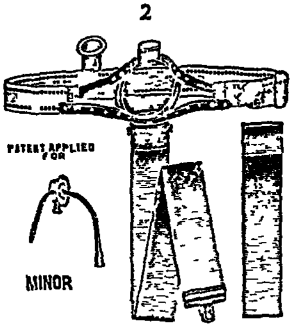
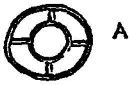


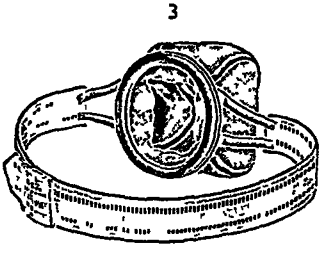
FIG. 1—Salisbury Major.

FIG. 2—Salisbury Minor with hernia control (A).



The Salisbury Major is probably the better of these two appliances for irrigation purposes only, and is comfortable and reliable, if a trifle bulky, for all-day use. The Salisbury Minor is to be preferred chiefly for its inconspicuousness when worn under the clothes or for use abroad. Either apparatus can be employed for dealing with the evacuation produced by the use of an over-night pill or morning saline aperient, provided that the semi-solid parts of the evacuation are flushed away before they accumulate too much in the dome of the appliance.

The Salisbury Biretta (fig. 3) consists of an india-rubber bag, capacity 1½ pints, in appearance resembling a biretta. The part corresponding to the head-band of the Biretta is about 4 in. in diameter, and is held between two flat ebonite rings, firmly screwed together. The outer ring—i.e., the one nearer the body when the appliance is in use—is of D section for comfort. A detachable sorbo ring is supplied for additional comfort and security against leakage. Inside the ring is an easily detachable short flanged collar of which the end projecting into the bag is specially shaped as shown in fig. 3A. The function of this collar is to prevent the bag becoming sealed upon itself and to retain the fæces in the periphery of the bag. Owing to the size and flexibility of the bag and the presence of the collar, the fæces must remain in the most dependent portion of the bag, whatever the position of the patient. A hernia control can be fitted if required.



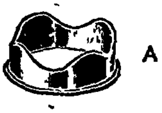


FIG. 3—Salisbury Biretta with detachable collar (A).

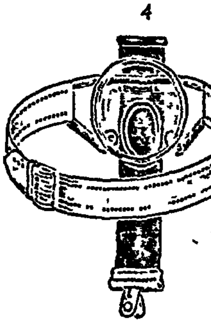


FIG. 4—Salisbury Minimus.

The bag is easily and quickly cleaned, merely by removing the collar and turning the bag inside out under the tap. There are no crevices needing special care in cleaning. The appliance is held in position by a belt attached to the rings by four straps fitted with quickly detachable fasteners.

This appliance is intended (1) for those in the immediate postoperative stage, to save the expense and objectionable features of the usual bulky dressings; (2) for those subject to nocturnal "accidents"; (3) for patients who prefer to take a morning aperient or an overnight pill rather than to employ the irrigation method of emptying the colon; and (4) for occasional all-day use.

The Salisbury Minimus (fig. 4) is an adaptation of the St. Mark's plate. At its lowest part is a 1½ in. opening leading into a very short flanged celluloid tube. Over the flange is stretched the circular opening cut in the middle of a 10 in. length of rubber tubing. Provision has been made for preventing the rubber tubing from sealing itself against the flange of the celluloid outlet pipe. The upper end of the rubber tubing is firmly closed by the upper belt strap which passes over it, and the lower end is closed by a specially flat spring letter-clip. A hernia control similar to fig. 2A can be fitted to increase the capacity of the very shallow dome, and this can be still further increased by using the detachable sorbo ring. Emergency cleansing is effected by pouring water through the rubber tube after removing the clip and loosening the upper strap only. This appliance is intended as a safeguard of minimum bulk for wear, for example, under dress clothes, and when any discharged matter is likely to be of small quantity and perhaps of liquid consistency.

All these appliances have been made for me by the Kenwood Surgical Company, of 189, Regent Street, London, W.1.

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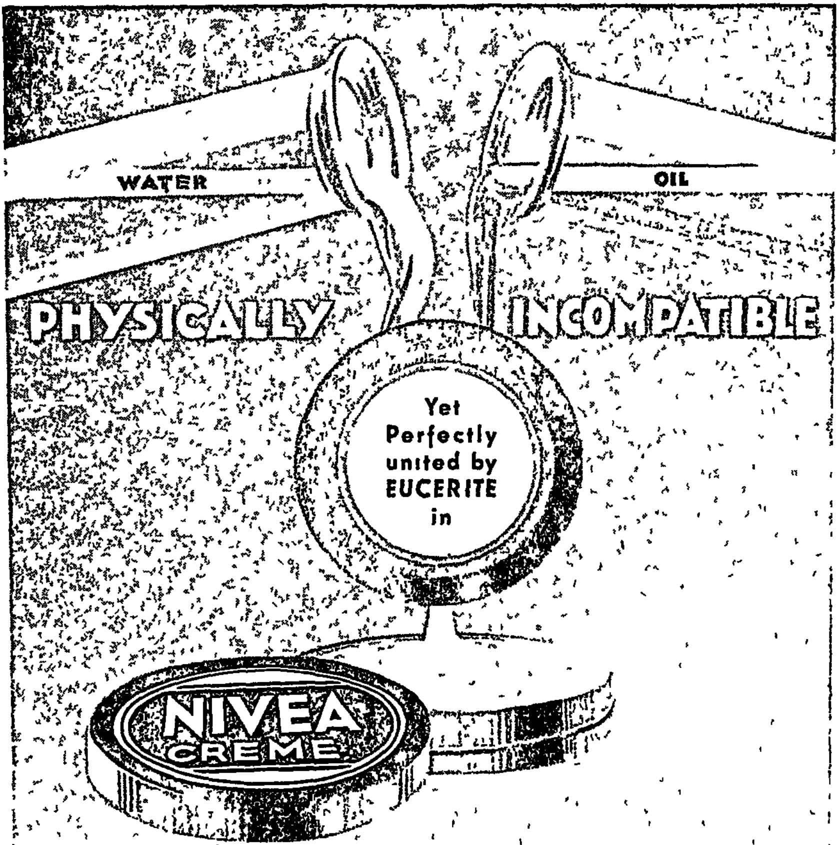

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[See also pp. 13 & 18.]

THE LANCET

LONDON SATURDAY, APRIL 8, 1939

ECONOMY IN HEALTH INSURANCE

THE International Labour Office has added to its important series of Studies and Reports on Social Insurance a volume on economical administration of health insurance benefits The first part,[1] which is published separately, is the work of Dr **WALTER PRYLL**, who has had many years' experience of health insurance in Germany, and it deals with the various ways in which economy may be secured in the general administration and particularly in the work of the insurance doctors The subject is obviously of basic importance Insurance funds are mostly built up from the weekly contributions of wage earners, many of whom can ill afford even these small payments, and all concerned with health insurance, whether as insured persons, administrators, or practitioners, are under obligation to do their best to ensure that the moneys available are strictly conserved for their legitimate purpose—to fulfil the needs of the insured people The desire to make the most of insurance contributions has, indeed, stimulated the modern development of health insurance At first its main object was to compensate the disabled worker for his loss of earnings by giving him weekly cash payments during the period of disablement, medical care, if provided at all, was regarded as a secondary consideration Increasing experience showed, however, that it was more economical to reduce the period of disablement by providing efficient treatment to restore the lost capacity for work The insurance organisations found also that further economies could be effected by undertaking health education and other preventive measures, and this side of health insurance has since the war been greatly developed in central Europe, the object being, as **PRYLL** says, "to change a steadily increasing proportion of the insured population into healthy risks, to restrict therapeutic measures to their natural minimum, to transfer the doctor from a healer of the sick into a family medical adviser, and to make the sickness insurance scheme a means of safeguarding the health and working power of the economically weaker sections of the population"

But these developments offer new occasions for economy There is a tendency to make unnecessary use of radiography and other expensive aids to diagnosis, to call in a consultant where no question of a second opinion should arise, and to order without sufficient justification courses of institutional, balneological, or other expensive forms of treatment The prevention of the unnecessarily expensive use of drugs is a serious problem Dr **PRYLL** mentions a case described by W **HEUBNER** in which a patient suffering from pneumonia was given within 24 hours "external painting with iodine, cold compresses, internally, three doses each of cardiazol, digipurat, and codein, together with inhalations of oxygen at intervals, two subcutaneous injections of ephetonin, one dose of anastil, intramuscularly, camphor oil, transpulmine, and quinine urethane up to a volume of 12 c cm in all, together with two intravenous injections of 10 c cm of grape sugar solution with cardiazol and digipurat" Such extreme cases are doubtless rare, but minor lapses into polypharmacy, and the use of expensive drugs when equally efficient and less expensive substitutes are available, are by no means uncommon The representative bodies of the medical profession recognise the necessity of observing due economy in prescribing The International Medical Association, for example, has repeatedly declared that though insurance doctors should have entire freedom to prescribe all medicines that are needed for proper treatment, the medical organisations should undertake to suppress unnecessarily expensive prescribing

PRYLL thinks that excessive treatment is often given because the doctor is unable to make a diagnosis "The most economical treatment," he says, "is the right treatment, and it cannot begin until the diagnosis, prognosis and plan of treatment have been drawn up" Another cause, in his view, is the lack of agreement on many therapeutic questions This he attributes to the backward state of research, which has advanced farther in the diagnostic than in the therapeutic field, and he lays stress on the importance of promoting research as a measure of economy A third important measure is the development of the preventive side of health insurance, especially in the work of the insurance doctor in his capacity as family adviser

> "The services of the insurance practitioner are not only medical but also educational and protective In other words, the insurance practitioner must explain to the patient and those living with him the most economical methods of treatment and care, give them advice on matters of hygiene, and in emergencies call in the assistance of the existing welfare organisation to help them in various matters affecting their daily life, such as income, food, housing, employment, etc The insurance practitioner cannot escape these special features of his task The insured persons look on him less as a learned doctor than as an adviser with special knowledge of medical and welfare matters who will stand by them in all the difficulties connected with their illness and who gives this assistance because he feels it is his vocation"

Finally **PRYLL** discusses the need for effecting economy by ensuring that cash benefits payable during periods of disablement are not paid to persons who are in fact capable of work The technique of preventing such payments has, he thinks, improved with increasing experience of insurance administration. The steady reduction in the number of insurance societies, which has taken place in nearly all countries, has been held to make for economical administration, but on the other hand it is contended that in a small society the members and the officers are so closely in touch with each other that they are able to effect economies that would be impracticable in a large society. It will be seen that the question of securing economy in health-insurance administration has many different aspects and they grow more rather than less important.

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[1] The Principle of Economy in the Administration of Health Benefits By Dr Walter Pryll Social Medical Officer of the International Labour Office Geneva The International Labour Office 1938

GLANDULAR FEVER

THE causation of glandular fever or infectious mononucleosis still remains in doubt Clinical studies have made it almost certain for some time that the disease is due to an infective agent and that its various types have a common ætiology. Bacteriologists, however, have been unable to incriminate any single organism. Several investigators claim to have identified a cultivable bacterium as the cause, but each has described a different one so that these are unlikely to have been more than accidental contaminants.

In 1931 BLAND[1] suggested that the infective agent might be a protozoon of the genus toxoplasma During the epidemic of 1930 he succeeded in producing a febrile disease in rabbits and guinea-pigs by inoculating them with blood from three human cases of glandular fever, and from two of these cases he was able to obtain passage strains of the disease in rabbits. This disease presented no features that could not be produced experimentally by inoculation with *T. cuniculi*, a toxoplasm of rabbit origin, and toxoplasms were constantly found in the organs of his primary and passage animals. Nevertheless, numerous control inoculations made on the same stock of animals with the blood of normal and of febrile people were entirely negative. Rabbit blood from one of the passage strains when inoculated into monkeys produced a disease very similar to human glandular fever. In the blood and organs of these monkeys no toxoplasms could be found, yet when their blood was inoculated back into rabbits the toxoplasms reappeared and the rabbits died of toxoplasmosis. So far Bland's observations have been neither confirmed nor contradicted

WISING[2] now describes the production in monkeys of a disease, similar to glandular fever and to Bland's experimental monkey infection, by the intracerebral and subcutaneous inoculation of emulsions of lymph-glands from two human cases. This disease was carried on in monkeys, in one instance for five passages and in the other for two, by the injection of lymph-gland emulsion. Smears of tissue from the human and monkey glands did not reveal the presence of any micro-organism, but sections of the human glands, stained with Giemsa and with victoria-blue, showed granules resembling elementary bodies Wising's photograph of these is not very convincing, since the granules lack that regularity of size and shape we should demand of any object that claims to be an elementary body, but photographs of elementary bodies often are unconvincing, and no doubt the actual preparations are more definite. The most interesting part of Wising's work is his claim to have transferred the monkey infection back to man with the production of typical glandular fever. An assistant who pricked his finger with the knife that had just been used to divide the extirpated lymph-gland in one of the passage monkeys fell ill on the very day that the next passage monkey, inoculated with this lymph-gland, began its attack of the experimental disease. On this day the assistant suddenly developed rigors, fever and general malaise, with tenderness and swelling at the site of the prick, lymphangitis of the arm, and enlargement of the regional axillary lymph-glands. He ran a temperature for six days with enlargement of lymph-glands in both axillæ and groins, and his blood showed a persistent mononucleosis, the presence of pathological lymphocytes and a transient positive Paul-Bunnel test to a titre of 1/256. Wising has thus established beyond reasonable question that the disease has an infective cause.

ON CONSCRIPTION

THE choice between a professional and a citizen army is never simple. The mere fact of amassing the whole military power of a nation under one command raises conflict and tension in unexpected places When MONTESQUIEU advised that "to render an executive sovereign incapable of tyranny the armies entrusted to him should consist of citizens, and should be of the same mind as their fellow-citizens" the danger he had in mind was the suppression of minority opinion and political freedom within a homogeneous state. A professional army can easily be a menace to the civilian way of living, and though the English have with rare and temporary exceptions refused to train their whole nation to arms they have avoided some of the risks of a professional army by making only an annual provision for its maintenance The dislike of conscription in this country springs from two sources, a dislike of militarism as such—chiefly of having to obey blindly—and a doubt whether power concentrated in the hands of one person or a small group will be well used. On the Continent the attitude has always been different; there the tradition is that the state needs the support of every citizen against a neighbouring foe, and whatever the state needs it must have ungrudgingly. Abroad there is a readiness to believe (not without reason) in the existence of a dangerous force beyond the frontier—more dangerous than any at home The island-dwelling Englishman is never quite so sure of this, and i therefore more sensitive to inconsistency betwee home and foreign policy If there is to be a concentration of the nation's military force under on command there must be no "wasting" of it o foreign wars, for in his view there can be n advantage in a continental war except to end it

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1. Bland, J. O W, *Brit J. exp Path* 1931, 12, 311
2. Wising, P. J, *Acta med scand.* 1939, 98, 328

The foregoing considerations relate to the past. Today there are three other factors to be borne in mind, of which the first is the speed of military events. Hitherto there has been an interval between the state of peace and the death-lock of battle—an interval of psychological preparation. But now there is no likelihood of such an interval, and up to the very moment of danger we shall be still trying to believe there will be no war. The fact that bombs might be dropped at once on our homes is reconciling us to much that we dislike, and conscription may be advocated as a means of stiffening the minds of Englishmen to meet the violent shock of war; it would give some of the advantages of the obsolete interval between the official commencement of hostilities and their actual occurrence. The second new factor, which is also a derivative of science, is mainly economic. In primitive societies the men go to fight, the women and boys tend the fields. But in an industrial state a factory cannot be run at a moment's notice by the women and boys left behind, and if it is true that an army marches on its belly it is equally true that a nation fights with its lathes. From this it might be thought that the simplest way to attain the maximum effort for the prosecution of a war would be to conscript the lathe workers; but this is not so simple as it sounds; for the very monotony of factory toil has given birth to a new set of loyalties and rules—loyalties to fellow workmen, and rules imposed bit by bit upon employers. Trade-unionism creates a state *within the state, a minority as strong as the national minorities that trouble* our continental neighbours, and this *inner state* influences home policy and *foreign relations.* Its attitude towards the conscription of workers (and of wealth) depends on the third factor in the situation—namely, the orientation of the aggressive impulse.

The impulse towards aggression may find satisfaction directly in wars of conquest, and in domination over "inferior" races, or it may be turned against the forces of nature: the former activity raises the standard of national glory, the latter raises the standard of living. As workers come to recognise the social constructiveness of their toil, they gain a new basis for criticism of their own government, and they begin to demand that not only home but also foreign policy should be adapted to further their social projects. The ultimate "ideological conflict" in the world today is whether the man-power of the country shall be turned primarily to social productiveness or to deeds of national self-glorification. Those who care most about the betterment of society are not easily persuaded to turn their effort into military channels, and the control of the man-power of the country will not in England be put into any government's keeping simply because it *is the government* in power. The question, it seems, is *not* "*if and when to conscribe men*" but on what programme the full force of the nation can be united.

ANNOTATIONS

THE TUBERCULOUS PATIENT

THE Tuberculosis Association is essentially a clinical and practical body and many of the debates at its meetings centre round the treatment of the local lesion and the ingenious methods that have been devised for the closure of the tuberculous cavity. At the meeting of the association, held last week at Cambridge, there was a refreshing departure from these much discussed topics; and the tuberculous patient himself would surely be relieved to learn that attention was diverted for a brief space from his lungs to his livelihood, which often causes him so much anxiety as to affect his progress. Dr F. R. G. Heaf, who made it clear that his personal opinions must not be taken as those of his county council, asked if the tuberculous patient was getting a square deal and whether we were not trying to make the patient fit the scheme rather than the scheme fit the patient? Without deprecating collapse therapy he did deprecate the tendency to regard the treatment of phthisis as beginning and ending with the closure of cavities; relapse after an expensive course of treatment was often due to neglect of the economic position of the patient. To label a person a consumptive was apt to lead to his financial ruin through loss of employment. Industry could not be expected to absorb a substandard person, and moreover it was not in the patient's best interests to enter into active competition with the fit and healthy. That is not to say that the tuberculous person after a course of treatment is not employable. Dr Heaf showed a series of radiograms selected at random from patients in village settlements. These films, many of which revealed extensive disease, were all of men who had worked for from 3 to 10 years and earned from £300 to £1500. Not only were they costing the state nothing but they were actually earning a sum equivalent or more than equivalent to *their own maintenance*. Dr Heaf added that a number of the administrative difficulties of a tuberculosis scheme, such as persuading a patient to accept treatment, preventing the spread of infection by careless sputum-positive cases, and the caring for the chronic relapsing case would largely disappear if an adequate rehabilitation system was established, for then the distant future could safely be discussed with the patient and his relatives *before* active treatment was started. The best approach, in Dr Heaf's view, lay *in the formation of a national board composed of* tuberculosis specialists, industrial magnates and official representatives from the Ministries of Health *and Labour*. The functions of this board would be to found industrial settlements throughout the country and to encourage productive labour therein; to act as a labour bureau for the tuberculous and invite firms to employ such persons on a sliding scale of subsidies; and finally to set up standards whereby patients could be graded as to their fitness for employment. It was suggested in the discussion *that followed Dr Heaf's paper that the trade unions* should certainly be represented on such a board; and it is relevant that the unions have already recognised that the tuberculous patient is employable by allowing him to work at Papworth at trade union rates.

All this deserves thought. *Is it as essential as* some believe to go all out for the closure *of cavities* and are the results of attempts to effect such closure so successful that it should be the prime consideration of treatment? Those who saw and pondered over Dr Heaf's radiograms may be inclined to reserve judgment. In any case we ought to give more attention to improving the prospects of the consumptive. Last century he feared the disease because it meant death; now he dreads the unemployment and loss of self-respect that follow in its wake Dr. Heaf quoted Sir Clifford Allbutt's observation that the first thing a physician had to give his patient was *hope* It is impossible to give a patient hope until you have banished fear.

CARDIAC INSUFFICIENCY AND ACUTE NEPHRITIS

THE observed frequency of cardiac insufficiency in acute nephritis varies with the criteria used for its recognition and the care with which it is sought. In different reported series its incidence has varied from 17 to 50 per cent.; but in 138 cases of acute nephritis seen at the Johns Hopkins medical clinic[1] evidence of cardiac insufficiency was found in 98 (71 per cent) The nephritis in all the cases followed a streptococcal infection and it was mostly observed from the early stages. Symptoms of heart-failure appeared with the onset of the nephritis or a few days later. The main symptom was usually increasing breathlessness, which sometimes progressed to orthopnœa Serial radiograms demonstrated enlargement of the heart, which regressed as the cardiac condition improved, and there were alterations in the heart sounds and rhythm. Systemic venous pressure was increased, and in some cases the liver was enlarged. In the presence of renal œdema it was difficult to state dogmatically that any increase in the œdema could be ascribed to the circulatory insufficiency, but it was significant that the onset of cerebral or pulmonary œdema coincided in some cases with the appearance of other signs of cardiac insufficiency. The Baltimore group divided their cases of nephritis into mild, moderately severe, and severe, according to their clinical features Heart-failure was uncommon in the mild attacks, frequent in the moderately severe, and present in most of the severe cases. The authors point out the importance of recognising the condition, which, serious in itself, becomes doubly serious when the circulatory insufficiency further impairs the function of the damaged kidneys Though the assessment of the value of treatment presents difficulties, digitalis in full doses seemed to benefit some of the patients with severe circulatory failure.

BLOOD-TRANSFUSION IN INFANTS

THERE are a number of conditions affecting the newborn, such as icterus gravis neonatorum, severe anæmia and the hæmorrhagic diseases, in which the transfusion of blood may be desirable or even life-saving, but the difficulties of intravenous administration in small babies are always great and sometimes seem insurmountable. For a satisfactory transfusion on an infant it is necessary to have three things First, a vein which is constant in position and of reasonable size must be found; Ormiston[2] recommends the superficial temporal vein or its tributaries; Collins[3] in Australia, however, uses the beginning of the great saphenous vein, where it passes upwards and backwards over the anterior surface of the medial malleolus of the tibia Secondly, a method must be devised whereby the vein, however small, can be entered by the cannula with absolute certainty In the apparatus described by Collins this is attained by using a gauge 18 hypodermic needle, with the point cut off and the end left circular and bevelled towards the lumen. Into this needle, or cannula as it has now become, is inserted a stilette with a rounded tip. Even the most minute vein can be entered by the stilette, and when that has been introduced it is a simple matter to insert the larger body of the needle The third requisite for successful transfusion on the newborn is some means of exerting positive pressure so as to propel the fluid along the vein; this is provided in Collins's apparatus by a Record syringe and a three-way tap.

Both recipient and donor must be grouped and their compatibility tested directly, for a reaction is more serious in a baby than in an adult The blood is best collected by a closed method The vein is found by a small transverse incision carried down to the periosteum by blunt dissection, and the cannula is then introduced and tied in The amount of blood suggested by Collins is 66 c cm. per kg of body-weight—rather more than most pædiatricians advise The speed of introduction must be very slow, not greater than 3 or 4 c cm per min. In larger infants, who need more blood, the continuous-drip method is more satisfactory; this requires a slightly bigger needle and stilette

Ormiston's method does not involve cutting down on a vein—an advantage where repeated transfusions are required—but needs a good deal of practice by the operator. Collins claims that with his apparatus blood or fluid can be given intravenously to any small or newborn baby, and that there is now no reason for withholding transfusion on the grounds of technical difficulty.

FACTOR ANALYSIS IN PSYCHOLOGY AND MEDICINE

A REMARKABLY lucid and comprehensive survey of the aims and methods of factor analysis in psychology has been made by Prof Godfrey Thomson[1] He deals in turn with the analysis of mental tests, the assessment of factors for individual examinees, the errors and fluctuations produced by inadequate sampling or incomplete selection, and finally with the meaning of the factors themselves In opposition to Spearman's hypothesis of a general mental energy entering into every intellectual performance, but differing in amount from one individual to another, Prof. Thomson develops his theory that an intelligence test really samples the neurones in the examinee's brain In crude terms, this implies that the relative inefficiency of the mentally defective is due not to lack of mental energy but to lack of cortical neurones —to the fact that they have only about 7000 million neurones instead of 12,000 million: energy is taken to be the product rather of the emotional and instinctive mechanisms Burt's view that the mental and emotional types revealed by correlating persons are the same as those revealed by correlating traits is fully discussed; though current methods of diagnosis tacitly imply its acceptance, it is held to raise several unsolved difficulties

In the main, however, the book is concerned with methods rather than with results—methods which could perhaps be applied quite as fruitfully to the wider problems of physiology and medicine as to those of the human mind or brain. The causes of physical disorder, like those of mental disorder, are nearly always multiple The object of factor analysis is not merely to discover the probable directions in which the chief causal factors are to be sought, but also to assess the relative weight of each one. It is this latter issue which is so often neglected both in medical and in psychological research. In investigating mental deficiency, for example, one school will maintain that deficiency is essentially an inherited characteristic, another will maintain that environment is just as important. The factorist (as he calls himself) assumes that in all probability both causes play an appreciable part, and his aim is to discover what is the relative influence of the two. In almost every department of medicine there are unsettled controversies of this type which could largely be decided by applying statistical methods such as those Prof. Thomson has so clearly described.

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[1] Whitehill, M R Longcope, W. T, and Williams, R., *Bull Johns Hopk. Hosp* February, 1939, p 83

[2] Ormiston G, *Lancet*, 1938, 2, 82

[3] Collins, V. L, *Med J. Aust* 1938, 2, 1121.

[1] The Factorial Analysis of Human Ability By Godfrey Thomson, D Sc, Ph D, professor of education in the University of Edinburgh London University of London Press 1938 Pp 326 16*s*

HÆMORRHAGE AFTER PROSTATECTOMY

THE problem of post-prostatectomy hæmorrhage remains unsolved, despite the advances made by Thomson Walker and Harris. Sir Henry Newland[1] suggests how the danger of hæmorrhage may eventually be overcome. In thyroidectomy bleeding is controlled, *before* the gland is removed, by ligature of its main vascular supply. Could not a similar procedure be adopted before enucleation of the prostate? This gland receives its main blood supply from the inferior vesical artery, but smaller branches are derived from the middle hæmorrhoidal and internal pudic arteries. Unfortunately, there is no single prostatic artery, and the various afferent vessels form two groups, the urethral and the capsular. The urethral group enters the prostate at the prostatic vesical junction, and it is at this point that it might be possible to secure it and thus control the main supply to the prostate before enucleation. Newland merely puts forward this suggestion without saying that he has tested it. It will therefore be for others to consider whether his plan is feasible, or whether the differences between thyroidectomy and prostatectomy are so fundamental that it is impossible to apply to them the same methods of hæmostasis.

PERIARTERITIS NODOSA

IN 1866 Kussmaul and Maier described a peculiar disease of arteries accompanied by renal lesions and a rapidly progressive muscular paralysis. More than 200 cases of this periarteritis nodosa have since been reported, and its outstanding feature seems to be its variability. Essentially the condition consists of a focal necrotising inflammation of the smaller arteries and arterioles, leading to aneurysms, hæmorrhages, and infarctions in various parts of the body, including skin, subcutaneous tissue, and muscles as well as the internal organs. According to Arkin[2] the organs are affected in the following percentage of frequency: kidney 80, heart 70, liver 65, gastro-intestinal tract 50, mesenteric artery 30, muscles 30, pancreas 25, nerves 20, and central nervous system 8. Since the clinical features depend on the parts affected, these features are naturally variable. One of the chief difficulties in diagnosis is the fact that the condition often simulates other diseases. For example, Weir[3] described a case in which the gross autopsy findings simulated tuberculosis of lungs and spleen. He applies the term polyarteritis nodosa in preference to periarteritis.

The disease tends to be acute and febrile and is generally fatal within a month or two, but there are exceptions. Kourilsky and his co-workers[4] have lately described a case which was of long duration and almost entirely apyretic. The patient was a man of 39 who had two attacks, with an interval of six years, characterised by painful nodular skin eruptions in the right leg. The first, which lasted seventeen months, was accompanied by painful decalcification of the metatarsal bones and was mistaken for tuberculosis; in the second, which lasted two years, the chief symptoms were nervous, suggesting disseminated sclerosis, and sexual impotence. Neither attack was accompanied by any notable pyrexia or by signs of visceral lesions. A feature of both was the rapidity with which they subsided, the first with rest and the second with non-specific protein therapy. Intramuscular injections of 3–5 c.cm. of sterile milk at intervals of four days caused immediate improvement, and after the seventh injection the symptoms, apart from the sexual disturbance, had practically all cleared up. At the time the report was written the patient had remained well and without sign of recurrence for a year. It may be recalled that Metz[5] produced in white rats a condition resembling periarteritis nodosa by non-specific protein hypersensitisation.

A FESTSCHRIFT FOR HARVEY CUSHING

THE March number of the *Acta Chirurgica Scandinavica* is dedicated as a festschrift to Harvey Cushing and comprises 25 papers, all but 2 of which are in English. As is natural, the contributions, which are all from Scandinavian colleagues and friends, are mainly of neurosurgical interest though there are some with endocrinological bearings. Amongst the latter is an interesting report by J. P. Strömbeck and T. P. Hedberg of an example of phæochromocytoma of the left suprarenal body associated clinically with paroxysmal hypertension. The patient, a woman aged 30, had suffered from these attacks for over a year; they lasted from half an hour to an hour and were accompanied by an increase in the blood sugar, enlargement of the thyroid gland, and an excess of adrenaline in the blood. Even between attacks her blood contained about 30 times the normal amount of adrenaline, but during an attack it contained at least 1000 times the normal amount. Deep palpation of the tumour provoked attacks. The difficulties of surgical intervention in these tumours lie in the problem of anatomical approach, the liability to hypertensive crises during removal of the tumour and the risk of postoperative collapse from adrenal insufficiency. In this case the transperitoneal route was adopted; it is preferred to the lumbar approach. During ligation of the main vessels to the tumour the systolic blood pressure rose to 290 mm. but the subsequent course was more tranquil. It is suggested that such crises may be avoided by incising the capsule and scooping out part of the contents of the tumour before ligation of the vessels.

Operations for the relief of internal hydrocephalus are legion and the introduction of a new one is said to mark a phase in every surgeon's life. This however is not to disparage a fresh attempt by A. Torkildsen to cope with cases where the sylvian aqueduct is obstructed. His solution is a by-pass for the cerebrospinal fluid provided by a rubber catheter leading from the occipital horn of the lateral ventricle to the cisterna magna. Each end of the catheter passes through a hole in the skull, the main part being accommodated in a groove chiselled in the occipital bone. The device has the charm of simplicity and we are told that 4 cases have been relieved by it, one for a period of eighteen months up to the time of writing. Should this operation gain currency it may be supposed that some material more durable than rubber will be sought, though Torkildsen appears to be satisfied with this material

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[1] Newland H., *Aust. N.Z. J. Surg.* January, 1939, p. 263.
[2] Arkin A., *Amer. J. Path.* 1930, 6, 401.
[3] Weir D. R., *Amer. J. Path.* 1939, 15, 79.
[4] Kourilsky, R., Garcin R., Bertrand I. and Hinglais, H., *Bull. Soc. méd. Hôp. Paris*, Dec. 26, 1938, p. 1781.
[5] Metz, W., *Beitr. path. Anat.* 1931, 88, 17.

G. Ekström and A. G Lindgren summarise their histological findings, more fully recorded elsewhere,[1] in 35 brains from patients subjected to arteriography in Prof. Olivecrona's clinic. In this, the largest collection so far reported, intravascular retention of Thorotrast was found in 21 cases This retention was associated in 6 cases with ring-hæmorrhages and foci of encephalomalacia which were sometimes remote from the tumour as well as near it. In at least 1 case the arteriography seemed to have been the immediate cause of death The investigators note that there is at present no harmless method for the exact localisation of intracranial lesions and they regard arteriography as both unavoidable and invaluable in dealing with intracranial aneurysms; it is also helpful in the recognition of malignant gliomas for which decompression is useless The neurological surgeon is in an unfortunate dilemma in the face of the accumulated evidence that the only method which will give him the information he may need can cause grave and irreparable damage to normal tissue Pending the discovery of a radio-opaque substance that can be injected without injury to the patient he cannot always escape a decision which is likely to lead to disaster either way.

DIVINYL ETHER FOR THE YOUNG

DIVINYL ether has now been in use for some years and its efficiency as an anæsthetic, as well as the care necessary on account of its potency, is well recognised Since its merits and limitations were set forth in our columns soon after its introduction[2] many have testified to its value as an adjuvant to gas and oxygen during major operations on adults But there is another purpose for which it is especially well adapted and not much used For short operations on young children it is probably the best drug available, being non-irritating and very rapid in its effect. To give nitrous oxide to very young children may be inconvenient; ethyl chloride, which is as efficient as divinyl ether, is not quite so safe; and ethyl ether has a slower rate of induction and the disadvantage, for outpatients, of a much longer period of post-anæsthetic unconsciousness Dr. Gross of Boston, Mass, reports a series of 100 cases in which he has employed divinyl ether for such procedures as incision and drainage of an abscess, aural paracentesis, dilatation or retraction of a tight foreskin, removal of deeply embedded splinters, dilatation of urethral strictures, external meatotomy, and suture of small lacerations[3] In operations lasting 5 or 10 minutes on infants or young children, he says, there is no necessity for premedication. He prefers the open methods; free air dilution must be ensured and the mask should be covered with some half-dozen layers of gauze and not surrounded by a towel or cotton-wool The rate at which the ether is dropped on the mask is one or two drops a second Generally in Gross's cases induction took about half a minute and after operation consciousness returned in about three minutes Only 5 of the children had post-anæsthetic vomiting In a few cases divinyl ether was used as an induction agent in longer operations to ensure rapid onset of narcosis in excitable children. After less than a minute, when muscular relaxation was obtained, it was replaced by ethyl ether, not because it is unsafe to give it over a longer period but because of the difficulty of maintaining an even depth of anæsthesia with a drug that acts so quickly.

THE SURGERY OF URETEROCELE

IN an excellent survey of the modern surgical treatment of ureterocele[1] Dr. Gutierrez points out that all the varieties that have been described are in reality the expression of a single pathological entity, the differences being due only to the stage of the condition. The usual cause is supposed to be a stenosis of the opening of the ureter into the bladder, but, as the author observes, this alone would not produce a ureterocele but only a hydro-ureter and a hydronephrosis The ureter will not prolapse into the bladder unless there is a weakening of its muscle-fibres and connective tissue These predisposing causes of the development of a ureterocele are believed to be congenital as a rule; this would explain the relative frequency of the condition in the very young, its association with other anomalies of the urinary tract, and its tendency to be bilateral The diagnosis is established by cystoscopy and intravenous pyelography, and the treatment is determined by the stage to which the ureterocele has advanced When discovered early it can be adequately dealt with cystoscopically, either by fulguration with a pointed electrode or by meatotomy by means of cystoscopic scissors More radical operative procedures fall into two main groups according to the pathological lesion present: (1) cystostomy with excision followed by suturing of ureteric mucosa to bladder mucosa, and (2) combined uretero-nephrectomy This serious operation will only be required when diagnosis has been delayed until the kidney on that side has been hopelessly destroyed It must be the aim of urologists to recognise the condition before such a catastrophe has arisen Dr. Gutierrez gives records of a series of 18 cases that he has himself observed and treated.

ALBERT FRAENKEL

Prof Fraenkel, who died in Heidelberg just before Christmas, was an outstanding clinician who admired English medicine and had many friends among his colleagues in this country. He was born in Mussbach in the Rheinpfalz in 1864, and was at an early age determined upon a medical career. He trained in Munich and Strasbourg under von Recklinghausen and Kussmaul and his first qualified post found him at the Frauenklinik in Munich intent on becoming a surgeon Here he contracted tuberculosis and was compelled for a time to retire from medicine; but this trying experience was to stand him in good stead, for it gained him the great depth of insight into the personality of the patient which made him a great physician In Berlin he witnessed as assistant to Cornet the first experiments with Koch's tuberculin with the hopes they produced and the disillusion that followed. Shortly afterwards he settled down in Badenweiler, a then little-known spa in the south of the Black Forest, which later rose to popularity from the success of the two hospitals he founded there. During the winters his interest in rational therapeutics led him to the pharmacological institute in Heidelberg where, under Gottlieb and von Schröder, he had fine opportunity of building his future clinical practice work upon a sound pharmacological basis, as did Lauder Brunton in this country before him Thus the ground was well prepared for the work that is associated with his name—the intravenous

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[1] Zbl. Neurochir. 1938, 4 227.
[2] Shipway, F E, Lancet 1935, 1, 82.
[3] Gross, R E, New Engl. J. Med Feb 23, 1939, p. 334

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[1] Gutierrez, R, Surg Gynec. Obstet. March, 1939, p 611

use of strophanthin in cardiac failure The progress achieved by Fraenkel's method was due mainly to accuracy of dosage, which was itself dependent upon the route of administration and the choice of a chemically constant water soluble substance These criteria were satisfied by the intravenous injection of k strophanthin (Kombetin), so that both the quantity of glucoside and its duration of activity were more accurately registered than was possible with an orally administered preparation He regulated each dose according to the degree of response to the last, so as to achieve an optimal therapeutic effect, and from the rapid destruction of strophanthin avoided any unpleasant symptoms of cumulation Moreover the relation between dose and effect could be used as an index of the degree of heart-failure, and in formation of a prognosis Among the earlier writings of Fraenkel there is also evidence that before Hatcher, he demonstrated the meaning of cumulation in relation to digitalis bodies in animal experiments On the Continent Fraenkel was recognised not only as an outstanding cardiologist but also as an authority on pulmonary tuberculosis, and his work with Gräff on the clinical classification of pulmonary tuberculosis has been widely accepted He acquired further merit by his foundation of small hospitals, first in Badenweiler and later in Heidelberg, where he instituted the most modern methods of investigation and treatment whilst paying special attention to the psychological relation between doctor and patient, so important a factor in the treatment of tuberculosis Albert Fraenkel was elected professor extraordinary in the University of Heidelberg in 1928 and held this post until he was forced to resign in 1933 His deep personal insight and his remarkable kindness and understanding made him loved and respected

PROPHYLAXIS OF WHOOPING-COUGH

DURING the last eight years some of the reasons for the previous failures of vaccines in the prophylaxis of whooping cough have become apparent, and recent studies seem to indicate that by their use resistance to infection can *definitely* be increased In 1932 A R Rich postulated a virus as the cause of the disease, but subsequent workers have failed to establish its existence, and have shown beyond all question that *Hæmophilus pertussis* is the infecting organism It is generally agreed that if a vaccine prepared from *H pertussis* is to have any prospect of success freshly isolated smooth (phase I) strains must be used, that a total of at least 80 million organisms must be injected, and, even so, that full protection cannot be expected to develop until two or three months have elapsed In the course of a critical review Maxcy[1] observes that no satisfactory laboratory method of estimating the immunising value of pertussis vaccine has so far been devised, and that the demonstration of complete complement fixation in inoculated children is not proof of active resistance to the disease any more than the absence of complement fixation is necessarily an indication of susceptibility In short, the value of pertussis vaccines can only be determined by human trial under such conditions as permit of unbiased judgment The ideal would be the observation of a large group of injected children together with an equivalent group of non injected controls There should be the same facilities for detecting and diagnosing definite clinical attacks in the two groups and the periods of risk should be equal and should be long enough to afford opportunity for a significant and equally distributed number of natural exposures Although these conditions are never completely realisable, several valuable studies have been made Among these Maxcy quotes that of P Kendrick and G Eldering as affording convincing evidence that the injection of approved vaccine does provide a considerable degree of immunity for about a year These workers gradually accumulated an inoculated and control group of children aged from eight months to six years Their final analysis was based on 1815 children, representing 2268 person years of experience, in the injected group and 2397 children, representing 2307 person-years' experience, in the control group Both groups were similar in respect of susceptibility and exposure The attack rate, expressed on the basis of 100 persons at risk for a year, was 2 3 in the injected and 15 1 in the control group On the other hand Maxcy quotes a study of 483 injected children and 496 controls made by J A Doull, G S Shibley and J E McClelland in which there were 61 attacks among the inoculated and 71 among the controls, an insignificant difference, though the attacks in the first group seemed somewhat milder The method of injection and total dosage employed were approximately the same in these studies, and Maxcy ascribes the variability in results partly to differences in the preparation of the antigenic suspension Since the effective antigenic substance peculiar to phase I has not yet been identified the conditions that will ensure the maximum yield are unknown Until more information is forthcoming, vaccines must be made and used strictly according to the approved principles if they are to be relied on to confer an adequate degree of resistance

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DR ROBERT HUTCHISON has been re elected president of the Royal College of Physicians

The death is announced on April 1 of Major General D J COLLINS, C B, M D After a distinguished career in the Army during which he served in India, South Africa, France, and the Near East, Collins was appointed on his retirement in 1920 director of the county of London branch of the British Red Cross Society *In 1935 he was appointed a colonel commandant of the Royal Army Medical Corps*

" In spite of the failures of so many families, no device has yet been found for the raising of more efficient children apart from family control and guidance It is probable that each family has an optimum level for the rearing of offspring some functioning best with one, some with two and some with several, and some families performing their greatest uses to society without offspring It is not a question of economic but of psychological and affectional adequacy If government simply removes the environmental limitations to the *proper functioning* of a family, well and good, but when it goes beyond that it may overburden efficient parents and bribe inefficient parents to bring children into the world for which they can not care The natural result of this state of affairs will be adoption of child rearing by the state itself more *and more a custom also resorted to to protect the rising* generation from 'political heresy' In assuming this attitude the state pretends that it has the higher good of its people at heart but in destroying the optimum family balance and breaking into the normal family life, it goes far toward destroying family happiness, and for this in the case of the ordinary citizen there can be no substitute, however successful the state as a whole may appear to be'—J R SWANTON *Science*, March 21, 1939, p 253

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[1] Maxcy, K F, *Amer J med Sci* March 1939, p 427

SPECIAL ARTICLES

THE MEDICAL EMERGENCY IN CHINA

By Harold Balme, M.D., F.R.C.S

FORMERLY DEAN OF THE SCHOOL OF MEDICINE AND PROFESSOR OF SURGERY, CHEELOO UNIVERSITY, NORTH CHINA

The terrible war which has been raging in China ever since the summer of 1937, and which has inflicted such widespread suffering upon the Chinese civilian population, has evoked keen sympathy in this country, and the question is constantly being asked as to what is the actual medical situation out there, and how far are the national medical services of China in a position to cope with such an emergency. A further question, which naturally follows, is as to the extent to which Chinese medical education has been interrupted and dislocated by the Japanese military occupation of so many important educational centres

It is impossible to answer those questions intelligently, or to convey any adequate conception of the present medical situation in China, without first taking a brief glance at the development of medical science in China, from the early days of the ancient system of Chinese medicine (upon which, we must never forget, the vast majority of the Chinese people still have to rely) to the great changes which modern science has introduced within recent years. It is only against that background that the tragic happenings of the past year can be seen in their proper perspective.

FOUNDATIONS OF CHINESE MEDICINE

The system of Chinese medicine which is still practised over so wide an area in China has its roots in the ancient past, and long before the Christian era medical books were being published in China and an attempt was being made to organise a medical profession. It was somewhere about 2000 B.C. that the *Nei Ching*, or Canon of Medicine—still the sacred textbook of every native Chinese doctor—was first issued, whilst the famous Rituals of the Chow Dynasty (1122 B.C.) divided all practitioners into physicians, surgeons, dietitians and veterinary surgeons, and laid down the interesting rule that candidates for a licence to practise were to be classified according to their percentage of cures over a stated period! (Another rule forbade any physician to prescribe for the Emperor until he had first persuaded the Prime Minister to taste the draught!)

About the beginning of the Christian era Chinese medicine became more systematised. Fresh books were published; acupuncture was freely practised; the doctrine of the pulse was meticulously studied; Hwa To had his brilliant career as the greatest surgeon of his day; and in A.D. 1076 the Imperial Medical College was founded A definite curriculum was drawn up for this college, students being taught (and subsequently examined) both theoretically and clinically, the examination being divided into six parts: physiology and anatomy, medicine and surgery, differential diagnosis, therapeutics and prescription writing, clinical medicine and surgery, and the influence of the air and stars The candidates were classified in four grades, the first grade being appointed teachers, writers of medical books and consultants, the second grade general practitioners, the third grade referred for future re-examination, and the fourth grade ordered to change their profession!

The next few centuries saw various developments in Chinese medicine, mainly in the direction of the publication of textbooks on medical and surgical subjects, hygiene, obstetrics and the diseases of children, culminating in the issue of the famous 52-volume Materia Medica (the *Pen T'sao Kang Muh*, or Great Herbal) in A.D. 1578 This vast treatise, which included every imaginable remedy (?) from tiger's teeth to the excreta of bats, contained valuable and accurate details of the therapeutic action of a great number of well-known drugs, including many which have but recently received Western recognition, such as chaulmoogra oil, kaolin and ephedrine

With so propitious a start, Chinese medicine bade fair to take a leading place in medical science, but after the sixteenth century a sad decline set in, caused, for the most part, by the failure of the state to exercise control The medical colleges fell into disuse; the regulations governing the right to practise were abandoned; the various safeguards which had hitherto protected the profession from mere commercialism and quackery were, one by one, discarded; and the medical practitioners themselves, with no stimulus to increase their knowledge and no bond to hold them together, lost all their professional loyalties, and became a mere collection of individualistic and competing herbalists. There were still a few men of genius who shone out above their fellows—notably Lew Lan, whose Golden Mirror of Medical Practice, published in 1749, is one of the most important books on Chinese medicine ever issued, and whose remarks on the importance of the absence of noise in the treatment of the sick would surely have gladdened the heart of Lord Horder or Sir James Purves-Stewart But such appearances were rare and fitful, and the whole system of Chinese medicine gradually fell into disrepute.

Furthermore—and this is a point of great importance in any attempt to appreciate the present situation in China—certain vital aspects of knowledge, which have entirely revolutionised the thought and practice of the West, failed to reach China altogether until very recent times, particularly the natural and applied sciences, with the result that Chinese medicine, with all its scholarly basis, was bereft of the essential contribution which chemistry and physics, biology and practical anatomy, pathology and bacteriology, might otherwise have offered. What that failure has meant, in face of such a situation as the Sino-Japanese war has created, can be expressed in one terrible sentence Throughout the greater part of China today, wherever the old-time Chinese doctor holds sway, there is no modern surgery of any kind, no efficient first-aid work, no knowledge of asepsis or of antisepsis, no radiology and no nursing

INTRODUCTION OF WESTERN MEDICINE

It is to the religious organisations of Great Britain and the United States that the credit of introducing western medicine to China really belongs From the early days of Peter Parker, who landed in Canton from the States in 1834, and of Lockhart and Hobson, who followed from this country a few years later, a very large force of medical missionaries—many of them men and women of exceptional ability—have devoted their lives to the service of that country. It was they who opened the first hospitals for the reception of Chinese patients, who performed the first major surgical operations and autopsies, who established the first modern medical and nursing schools, who founded the first asylums for the blind and the mentally afflicted, who created the first scientific medical terminology, who translated the first modern medical textbooks, and who inaugurated the first activities in preventive medicine

Other agencies followed later In 1887 the Hong-Kong College of Medicine—an institution always associated with the honoured names of Sir Patrick Manson and Sir James Cantlie, and in which Sun Yat Sen was an illustrious student—was opened, whilst similar medical schools were subsequently started by the Germans and French, and by representatives of Yale and Harvard universities This valuable work has been still further augmented, during the present century, by the munificence of the Rockefeller Foundation, who have rebuilt and endowed the magnificent medical school and hospital at Peiping (Peking), and have liberally assisted many other forms of medical activity

Meantime a growing stream of Chinese medical graduates, both from the colleges thus formed in China and from well known medical schools in Europe, North America and Japan, began to form the nucleus of a modern medical profession The first Chinese student actually to receive a western medical qualification was Mr Wang Fun, who graduated with distinction from Edinburgh University as far back as 1855, but it is only during the past twenty years that there has been a steady flow of modern trained medical men and women, and it is doubtful whether their total number yet reaches 5000 One has only to compare this tiny force with China's total population of something approaching 400 million people to appreciate the immensity of the task which confronts them

CREATION OF A NATIONAL MEDICAL SERVICE

The educational renaissance which has been taking place in China during the past thirty years has had wide repercussions in the field of medicine Prior to 1905 education in China was purely a matter of private enterprise, the government merely conducting the annual examinations upon which official rank depended, and which were entirely based upon a knowledge of classical literature In 1905 this whole system was changed Government schools were opened up in all parts of the country, a modern curriculum replaced the purely classical course of study, science was introduced as a compulsory subject, and teachers recruited from all parts of the world, and—most important change of all—textbooks and journals and newspapers began to appear in ordinary colloquial Chinese instead of in the archaic literary form Everything western became relatively popular, and hundreds of eager young students began clamouring for instruction in modern subjects, including natural science and medicine The medical schools already opened under foreign auspices grew in numbers and in prestige, whilst other medical schools were opened by the Chinese government, for the training both of civilian and of army doctors Here, at the outset, instruction was mainly given by German and Japanese teachers, and both scientific equipment and clinical facilities left much to be desired, but by degrees an increasing number of well trained Chinese medical graduates became available as instructors, and the standard of teaching was raised by improved laboratory and hospital facilities

This same movement of thought, which was responsible for so vast a change in China's age long educational system, also affected the populace in general, particularly in their attitude towards such questions as public health, the spread of infectious disease and the care of the sick, and although the great bulk of China's millions remained unimpressed and conservative, interest was aroused in many quarters which paved the way for various social and health organisations

Meantime a most important step was taken by the government in the creation of a ministry of health, and in the appointment of Dr J H Liu, a graduate of Harvard Medical School and superintendent of the Peking Union Medical College Hospital, as the first minister Dr Liu—a man of conspicuous administrative ability—soon gathered round him a group of highly trained and enthusiastic medical men, recruited from the ranks of the more recently qualified, and with the aid of a generous government grant plans were quickly set on foot for the creation of a national medical service These plans included the establishment of national medical colleges in certain of the more highly populous centres, the building and equipping of central hospitals in the provincial capitals and other large cities, the development of a public health service, with diagnostic laboratories, vaccination stations and quarantine bureaus in each province, the opening of opium refuges, welfare clinics, and schools for the training of midwives, and a large publicity campaign, for the educating of public opinion in the preservation of health and the adoption of simple precautionary measures

Nor did these plans merely remain on paper, as Chinese schemes sometimes have a reputation of doing, for in the ten years immediately preceding the present terrible war there was no department of Chinese government service which displayed such energy, or achieved so large a measure of success, as the ministry of health Of course it is perfectly obvious that in a country of the size of China, and with communications still in a comparatively rudimentary state, only the barest fringe of the problem could be touched by the ministry within a mere decade, especially as everyone had to "start from scratch," but most encouraging progress had been made in every direction A large number of hospitals and training institutions were opened; a national medical association was created, an important branch of the International Red Cross was set up in China, with a finely equipped and staffed hospital in Shanghai, and first aid agencies in various other centres, and the assistance of League of Nations experts was secured, for advice on some of the larger problems in the combating of epidemics and the organisation of public health schemes

There was thus a splendid prospect of rapid development and sound construction, in every field of medical activity, at the time when the war broke out, but the tragic fact remains that the war occurred long before this young medical force was strong enough or numerous enough to meet it, and as a result they were caught utterly unprepared for the appalling casualties and terrible suffering which so quickly followed With all their enthusiasm and keenness, they had neither the organisation, the equipment nor the personnel for a task of such dimensions, and as the scene of battle swept rapidly over China, the small group of qualified red-cross workers were wellnigh submerged in the torrent

THE EFFECT OF WAR

The outbreak of hostilities in the summer of 1937 rapidly created a terrible problem for China's slender medical resources In all the big cities there were a certain number of well equipped hospitals, which immediately made preparation for the admission of the wounded, whilst the various mission hospitals, which totalled nearly 300 in all, made similar provision for the reception of war casualties On the field, however, it was a very different story, for the Chinese armies contained only the barest rudiments of a medical corps, and many divisions were absolutely destitute of skilled surgical aid or of proper medical appliances. Ambulances, stretchers, splints, surgical dressings, antitetanic serum, drugs—all were at a minimum, or, more often, simply non-existent, and after most battles great numbers of the wounded were left untended on the field, or crawled away to die in some place of hiding.

With the aerial bombardment of massed centres of population new horrors were added to the scene as women and little children, victims of shell and of fire, were brought by the score to the already overcrowded hospitals, or begged for pity from the passers-by. Thousands of refugees, rendered homeless by these raids or panic-stricken at the stories of the bestial savagery displayed by the Japanese troops in such cities as Nanking, brought fresh medical problems in their train, as cholera and other forms of infectious disease broke out in the camps which were hurriedly erected for their accommodation. It was difficult enough to provide the bare necessities of life for these helpless sufferers Anything like skilled medical and surgical attention or efficient nursing was utterly beyond the powers of the tiny band of qualified helpers, devotedly as they struggled, and in many a hospital centre the available stock of dressings, of anæsthetics, and even of narcotics became completely exhausted long before there was any possibility of replenishment.

The Chinese Red Cross, under the able leadership of Dr. Robert Lim—himself a fellow of the Royal Society of Edinburgh, and holding doctorate degrees in medicine, in science and in philosophy—made valiant efforts to cope with the appalling situation. Base hospitals were rapidly organised in central positions behind the main war zones, to which the more seriously wounded could be transported, so far as means of transport were available, and a training institution was set up at Changsha in which an intensive four-weeks course was given to relays of stretcher-bearers, dressers and orderlies, whilst hundreds of Chinese girls offered their services as nurses At these central hospitals the leading Chinese surgeons—many of them men of great ability—have used every resource of modern surgery in their endeavour to care for their wounded patients, and similar devotion has been shown by missionary doctors in the mission hospitals, many of which are well equipped with X-ray plants and modern instruments But for the most part their work has been confined to the care of long-standing and usually septic wounds, owing to the terrible lack of field hospitals or casualty-clearing stations, and the difficulties and delays of transit.

As the area of hostilities spread over province after province, the national medical services became increasingly absorbed in red-cross work, and their valuable public-health activities, so auspiciously begun, had for the most part to be abandoned. At the same time the position of the various medical schools became most precarious, as the action of the Japanese troops in deliberately and ruthlessly destroying the Nan Kai University at Tientsin and the fine National Medical College at Shanghai made it only too plain that they were aiming at getting rid of the chief institutions of Chinese higher learning Medical schools under foreign ownership, such as the Peiping Union Medical School, and the Cheeloo University in Shantung, over which I once had the honour to preside, were spared; but even in such institutions the students no longer felt safe, whilst there was the added feeling that it would be unpatriotic to continue their studies in Japanese-occupied territory. Large numbers of students of all faculties volunteered for one or other of the new armies which were rapidly recruited all over China, though the government urged them to stick to their studies But with most of the leading educational centres already in Japanese hands, the question was where to go.

The answer to that question forms one of the most remarkable epics in the whole history of China's educational development A widespread invitation to students of the occupied districts was issued by the colleges and universities of the remote western and south-western provinces, and from all parts of China a remarkable student pilgrimage took place Young men and women students of all ages left their homes and travelled 1000–1500 miles by every means imaginable—in ramshackle cars and lorries, on horseback, muleback or boat, on foot, or occasionally by air—one party of 200 joining forces and marching over the mountains for forty days, to find the hospitable college in a part of China still unravaged by Japanese soldiers, where they could continue their studies Many of them were quite poor, and all suffered endless hardship and discomfort on the long trek, but they bore it with customary philosophy and cheerfulness. Today they are once more pushing on with their collegiate courses, in overcrowded classrooms and laboratories, where teaching staffs have somehow or other been gathered together, and rudimentary equipment set up. They may be pursued and bombed, as has already happened to more than one college in the south, but students and staff merely gathered up their books and belongings, packed up the remains of their equipment, and moved off to find temporary quarters in some other and remoter city.

EFFORTS TO MEET THE PRESENT EMERGENCY

The above brief record will perhaps give a faint picture of the immense problem which China offers today to all who are interested in the spread of scientific medicine and in general humanitarian relief, and it only remains to indicate some of the means by which attempts are being made to assist the Chinese Red Cross in their efforts to meet the terrible emergency.

Large sums of money have already been collected, both in this country and in the United States, for the relief of the refugees, and the Lord Mayor's fund (now known as the British Fund for the Relief of Distress in China) has also sent out over £20,000 worth of medical supplies and instruments, and some 2000 bales of clothing and bedding The League of Nations has dispatched three important commissions to China—one composed of German-speaking experts, one French-speaking, and the third a British group under the leadership of Dr. Cecil Robertson—for the investigation of epidemiological problems and the organisation of widespread measures in stemming the spread of infectious disease and deficiency disorders Many individual doctors and nurses have already volunteered their services, and the newly formed China Medical Aid Committee,[1] of which Lord Horder is president and Prof. Millais Culpin chairman, is planning to send out a complete surgical unit in the near future Meantime an International Peace Hospital has already been organised at one centre in the north west, where no medical provision was available

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[1] The hon secretary of the committee is Dr Mary Gilchrist, 3, Lemna Court, Lemna Road, London, E 11, from whom all information can be obtained

But much yet remains to be done The war still goes on, and Japanese bombing aeroplanes continue to take a terrible toll of Chinese lives and to spread misery and suffering over vast areas of the country The ravages of warfare, of fire and of flood have left literally millions homeless and foodless, and in one refugee camp alone the mortality during the first few months was no less than 380 per 1000 The Chinese government is devoting large sums of money to refugee relief, and is opening up new forms of industrial and agricultural work for the employment of those who have no homes to which to return But the medical problem still remains to be solved, for hospitals need to be manned, public health measures pursued, and reconstruction efforts organised To accomplish these aims the Chinese medical services sorely need every form of assistance—medical and surgical appliances and equipment, drugs and dressings, money and men It would be hard to find a worthier object of practical sympathy and help

ANTITOXINS FOR WAR EMERGENCY

TETANUS ANTITOXIN

THE Medical Research Council, at the request of the Government, has arranged to provide tetanus antitoxin in sufficient quantity for both prophylactic and therapeutic use and to ensure its continued supply in the event of war Some particulars of the dosage recommended have been issued by the council The prophylactic dose is 3000 international units (*I U*), equivalent to 1500 American units (A U), and is contained in a volume not exceeding 3 c cm During the early part of the late war a dose of 500 A U was administered as a routine, and the effect on the case incidence of tetanus was dramatic before the end of 1914 Although there was much evidence that this dose was highly effective, attempts were made during the later stages of the war to reduce still further the already low case incidence of tetanus by repeating the dose or increasing it[1], and the tendency since the war has been to advocate the administration of 1000 and more recently of 1500 A U[2] The dose to be administered for prophylaxis, in case tetanus antitoxin is again required, has accordingly been fixed at the level mentioned above (3000 I U), though it can, of course, be increased or repeated if necessary The ampoules of concentrated antitoxin acquired for the treatment of cases of tetanus contain not less than 20,000 I U in a volume not exceeding 8 c cm

The relation of the A U to the I U is quite simple (1 2), but it is thought necessary, in order to avoid confusion, to express the strength of tetanus antitoxin in both units The I U adopted by the Permanent Commission on Biological Standardisation is now used in many countries, including Great Britain, but the original A U is still employed on the American continent and elsewhere References to other units, formerly used, occur in the literature the old German unit, for instance, was equal to 66 A U

GAS GANGRENE ANTITOXIN

The provision of gas gangrene antitoxin has proved more difficult owing largely to the lack of essential information upon which policy and action could be based While it is generally recognised that early and adequate surgical treatment is by far the most important measure to be adopted, opinion is divided as to the value of antitoxin in the prophylaxis and treatment of gas gangrene infections It is generally agreed, however, that the proper use of gas gangrene antitoxin is as an accessory to thorough surgical measures, and not as a substitute for these Other difficulties in the way of making provision of antitoxin arise from the uncertainty as to the kind of pathogenic spore bearing anaerobes likely to be encountered, nor is it known whether the same infecting organism will predominate in urban and rural districts, and whether the antitoxin should be given to all casualties or whether its use should be restricted to the kind of injuries which, as the war experience showed, are particularly liable to become gangrenous Little is known about the dosage appropriate for prophylaxis or therapy Infection is due more often to the Welch bacillus than to other anaerobes such as vibrion septique and œdematiens, but under ordinary conditions of civil life gas gangrene cases do not seem to be common It is therefore considered unnecessary to provide antitoxin on a scale sufficient for prophylactic administration to all casualties

The stocks of Welch, vibrion septique and œdematiens antitoxins acquired are believed to be adequate to meet the needs of the defence services and the civil population both for prophylaxis and therapy Modern preparations of gas gangrene antitoxin are of higher potency than those used in the war, and the potency can be determined accurately and expressed in universally accepted international units The arrangements which have been made allow for the administration of Welch, vibrion septique and œdematiens antitoxin, either separately or combined, and an injection of one or more of these antitoxins, combined with tetanus antitoxin, could be given As to dosage, the provisional proposal, which may have to be modified in the light of experience or to suit special circumstances, is to administer 3000 units of Welch 1500 units of vibrion septique and 1000 units of œdematiens antitoxin as a combined injection for prophylaxis, the dose for treatment being 2½ times as large The arrangements made also permit of injection of a single antitoxin, either for prophylaxis in areas where experience suggests that this is warranted, or for intensive specific serum therapy when the causal organism has been identified

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"The esteem in which we hold the ideal of 'pure learning for its own sake' is so great that we are afraid to discuss the nature of this learning and its relevance to the life of the world around us The respect for pure learning is certainly a very precious possession, even now only partly won and insecurely held in a myopic world Some feel that to examine its worth is to commit the sin of Thomas But any such attempt to set up an academic ideal which must not be questioned immediately runs counter to the most essential feature of the academic freedom which it attempts to defend Freedom of thought is not the conditional licence of conventional censorship or morality, allowing permission to think freely only along certain lines Knowing the dangers, it dares to hold that any human experience or practice will emerge the richer from the fullest force of analysis which the intellect can apply to it'—J Z YOUNG, *Oxford Science*, February, 1939, p 74

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[1] Official Medical History of the War Pathology p 164 1923 H M Stationery Office

[2] United States Pharmacopœia, XI p 61; British Pharmacopœia, 1932, p 62

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN ONLOOKER

II

THE fee, though a barrier, is also a bond If someone hands you half a crown you feel he is entitled to something in return. Soon you may be thinking he has had more than his money's worth, but you suppress the thought because next time he might take his half-crown elsewhere Most medical practice nowadays, we are told, is frankly competitive, and those who approve the payment of doctors by a fee for each service argue that competition for fees provides medical care for the public at the lowest possible cost.

But does it? The overheads of any small competitive business are enormous; and this is true of general practice The doctor's motor-car, for example, would often be unnecessary if he served the whole of a small area instead of parts of a large one Not only is there multiplication of transport, accommodation, apparatus, books and secretaries, but there is also much useless expenditure on appearances, since to him that seems to have shall be given

Even if it were true that competition keeps down costs, cheapness of medical attention might be bought too dearly. Part of the price is an element of commercialism that ill accords with the objects of medicine. If every visit has its financial side, the doctor is apt to find his daily life infiltrated by thoughts of money; and as the margin of profit diminishes private practice is becoming more and more of a trade. "An ancient and honorable craft," says W H. Hamilton, "had become a profession, the profession has lived on into an epoch in which it has had to make its terms with, to employ pecuniary devices from, and to respond to the incentives of, business"

Business has temptations, and the less prosperous it becomes the more the temptations obtrude If one is paid for each service one is tempted, consciously or unconsciously, to create unnecessary services—to prolong rather than shorten illness, to advise elaborate investigation and courses of treatment. The hungry doctor, as someone has put it, is a dangerous animal

But let every one of us be beyond reproach and there will still be a price to pay for competitive private enterprise If the profit on each patient is small, the practitioner must see a great many of them and must rely largely on guess-work, dispensing treatment without diagnosis. He is led into overwork; which is as wrong for a doctor as for an engine-driver And he naturally prefers to practise in localities where patients can pay; which means that many places are under-supplied with medical services while others have a surplus If all this is defended, one may ask what the profession is for: is its primary purpose to give the best possible aid to the public or to provide a certain sort of livelihood for its members?

A. G. Gibson approves of competition because "a true man will recognize that it means improvement for him in every way to have a neighbour, who will acquire more patients if he treats them more skilfully." But prosperity depends on *pleasing* patients, and skilful treatment is only one means to this end. All might be well if the public were pleased by the same qualities as appeal to the doctor's discerning colleagues, but in fact it is far too readily impressed by externals. The monetary basis of private practice today is the distribution of rewards by people who are easily misled and cannot be expected to distribute them according to real merit

And the faults of the present arrangements do not end even there If we were planning anew we should hardly devise a system in which, the busier a man becomes, the more likely he is to fall behind in his knowledge of modern medicine, a system in which the conscientious doctor has to refrain from visits his patients cannot afford; a system in which the conscientious patient is deterred (by fees which are really fines) from seeking advice until he is actually ill. "The present army of private medical practitioners," wrote Charles Parker, "may ease pain, arrest disease, and even restore to health, but in no sense can they under present circumstances initiate and carry out a great crusade against wrong living and unhealthy conditions, or war against the fundamental causes of disease" It is difficult, he added, to speak the whole truth and nothing but the truth when one's income is at stake.

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Competition is in fact a preposterous foundation for twentieth-century medicine Its defects may not matter when the patient does not much mind what he pays, or when the doctor does not much mind what he earns, but they become serious when the "*medically indigent*" patient meets the subjectively indigent doctor And both these indigent classes must increase as the costs of medical care rise

Aldous Huxley has lately pointed out that competition is best avoided by members of the same species. If intra-specific competition is biologically unsound, may not the same be true of intra-professional competition? The underlying principle of medical ethics, according to the Webbs, "is the prohibition of all deliberate or *intentional competition between* one medical man and another . . no man may proclaim, directly or indirectly, that his services are superior to those of any other medical man." Instead of letting this principle go down under the stress of increasing struggle ought we not rather to strengthen it by ensuring that doctors no longer compete with one another for the means of supporting their wives and families? Such competition is responsible for much disguised hostility in the profession—even in partnerships—whereas the public weal demands coöperation.

The complex societies of today will stand or fall by their ability to take the edge off the profit motive: they must stop their members from trying to get as much as possible out of the common pool and must encourage them to put as much as possible into it Medicine by tradition should be forward rather than backward in such a revolution of social ideas But if this is to be so, the profession must in future be regarded as a vocation rather than as a field for money-making. The first step should be to get rid of the idea that the training of a student is a good investment for a parent's money. Education should be more definitely at the public expense, and students should be selected, according to qualities, from the community as a whole and not (as at present) from the best-to-do sixth of it.

DOCTORS LIBRARY

If then the fee for service is a bad means of paying the doctor are the alternatives—the capitation fee and the salary—any better ?

When a practitioner goes on the panel he still competes with other doctors for his patients It now pays him to practise preventive medicine—to keep them well instead of ill—but unfortunately it also pays him to do as little for them, well or ill as is compatible with retaining them on his list A royal commission has rebutted the allegation that doctors give less attention to panel patients than to private ones, but I do not remember hearing it suggested that they give more The truth is that the doctor "takes advantage" of the system in neither sense he does not offer a demonstrably worse service to his panel patients, nor does he offer a demonstrably better one The chief reason for his failure is that the capitation fee is so low that his work is tolerable only if most of his patients never go near him Those who framed the scheme were content, as Sir Clifford Allbutt said at the time, with an antiquated notion of medicine and of medical service, while those who manage it today are trying always to make it pay, to earn a surplus, so that they may later make it more comprehensive National health insurance has thus failed to take the profit motive out of medicine, and ' whenever the public health and profit come into conflict, the former will suffer" Moreover by making the patient's panel doctor the judge of his right to sickness benefit—i.e, a cash payment—it has introduced a new and pernicious element into the relation between the two Not only is the unscrupulous practitioner enabled to attract patients by helping them to get money illegitimately, but the scrupulous practitioner is given two incompatible tasks As the author of "On the Panel" puts it, "he is asked to combine the function of sympathetic healer with that of a cynical detective It simply cannot be done It is absolutely impossible effectively to practise the healing art if all the time it is part of one s official duty to mistrust every statement a patient makes It is not the capitation payment but the business of certification which has made panel doctoring the fiasco it commonly is"

The PEP report refers bitterly to panel practice as "something more like a sickness licensing and registration system than a health service" The fact that it has nevertheless done much good—that on balance it is by no means a fiasco—may be negative evidence of the soundness of payment on a capitation basis

* * *

Payment by salary abolishes competition for patients, with its incentives and temptations, but it also allows the doctor to neglect his work in so far as he can do so without losing his job Is it preferable to the fee for service or the capitation fee ?

The vital difference is that whereas the doctor working for fees must please his patient, the doctor working on a salary must please his employer If patients are pleased by doubtful qualities as well as good ones, the same is true of employers—be they individuals, committees, or even groups of doctors The same is true also of colleagues of higher rank in the same service, indeed, whoever ceases to be his own master must take the risk of suffering by this human frailty The besetting sin of superior officers and controlling committees is that they prefer the minor virtues to the major ones "they like a man who is punctual, deferential, neat and orderly rather than one whose humanity and gift for righteous indignation cause him to lose sight of the advantages of strict observance of routine" If the medical profession were to accept salaried service its ability to do its best work would depend largely on who was its employer—who paid the salary and made the appointments

Salaried work contrasts with private practice in that energy and enterprise, unless they suffice to lift him clean out of his own class, bring a man no additional security and comfort And even an advance in status does not bring a fortune there are no glittering prizes in money But if this is regrettable it is none the less an inevitable accompaniment of what we call civilisation The neolithic hunter in his cave sometimes brought in haunches of venison on which his family feasted for days, but at other times they all went hungry Civilisation permits us all to lunch daily at multiple teashops, and here the food, though never as good as cave cooked venison, can be relied on to come regularly The teashop regime, squalid and unexciting as it is at its worst, makes it unnecessary for us to be thinking all day long, like the neolithic man, about where the next meal is coming from it leaves the mind free for other purposes The mind may remain empty, or it may give its owner a life as thrilling and much fuller than that of neolithic man In the same way the substitution of a regular (if meagre) salary for the unreliable (if splendid) takings of private practice leaves the doctor free to think about other aspects of his work—aspects at least as exciting and much more important to his fellows

He may not do so As I have already remarked, the problem before a civilised society that supplies the basic needs of its members is to find sufficient inducement to make them go on working hard for the sake of the community Yet the argument that doctors—unlike judges, professors, and clergymen—cannot be expected to do good work on a salary is neither complimentary nor perspicacious Medicine is far more interesting than most other occupations, and anyone well chosen for such work will want to do it for its own sake The standard of effort in a salaried medical service should be much higher than in other salaried services where the work is not intrinsically attractive and where there is less appeal to altruism It should rise moreover with the tendency to coöperate in groups having their own esprit de corps "I suspect," writes Hamilton, "that aside from the alleviation of suffering, the strongest impulse which moves the physician is the professional motive of winning the esteem of his fellows"

If every doctor were given a guaranteed salary tomorrow most of them would doubtless work less hard, but the diminution in overwork would not be all loss to the nation, or to the patient, and less work, well directed, might go further than more work, ill directed If all doctors were given a salary tomorrow they could of course be made to work very hard indeed by an employer who threatened dismissal for failure to reach a high standard Such an application of industrial methods, however, would nullify the main advantage of a salary to a medical man if he is not to have reasonable security he would rather work on his own as before, if meals at the teashop are not to be certain he would rather chance the luck of the hunt On the other hand, a salaried service, while rewarding energy and initiative ought not to offer unlimited security in the tenure of particular posts Competition for good appointments is, in moderation, healthy

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There remains the question whether the doctor-patient relationship can be satisfactory under the salary system. The patient can no longer say of his doctor "this man is my hired servant; he is bound to help me", nor can he say "this man is trying to get money out of me." But the dominant thought in his mind may well be: "this man's chief interest is to please his employer." Where the employer is a voluntary hospital with a fine record this may not matter in the least; that is to say, the traditional relation will probably be unaffected. But where the employer is a captain of industry, or the state, it may matter a great deal

When doctors are employed at a salary they are not employed directly by the patient but by a third party. If that is so, the relation between patient and doctor is now governed by the relation between the patient and that third party—whose agent the doctor has now become The doctor may worsen it by laziness or better it by care and kindness But the ultimate contract is no longer between him and his patient

If doctors are to cease from private practice the doctor-patient relationship will depend on who employs them. If we set store by any particular relationship it would be unwise to accept employment from people or organisations whose motives and methods differ substantially from our own

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

NATIONAL INSURANCE

THE national insurance law now being considered by a special committee embodies two radical changes. One is that artisans in the smaller industries will no longer be compelled to contribute, and the other is the introduction of old-age pensions. Both of these reforms will add considerably to the state's financial burden The actual cost will depend on what age-limit for the old-age pension is fixed by the committee According to M Ralea, the minister of labour, the new pensions will cost 400 million lei, of which half will be contributed by the employers and half by the employees The total annual insurance budget has hitherto amounted to only 1000 million lei, and the contributions will probably have to be raised some 50 per cent to cover the increased expenditure.

For the time being agricultural labourers are not compelled to contribute This is because of the shortage of competent doctors in the country districts, a shortage that is now being made good Contributors are entitled to medical attendance, medicines, dressings and so on, and to disability, accident, maternity and death benefit They are also entitled to annuities in case of permanent disability or invalidity. Medical attendance is provided from the first day of illness; sick-pay only from the third day. Invalidity allowance (in the form of a monthly subsidy) is granted only to those who have contributed for 200 weeks and are still working, or have contributed for 1000 weeks and have stopped work. Insured persons are entitled to an old-age pension at 60 equal to the invalidity pension The wives, children, and unemployed parents of contributors are entitled to medical attendance and to hospitalisation in case of necessity, but the insurance office pays only three-quarters of the hospital cost, the remainder having to be found by the patient's family On the death of a contributor his family are entitled to an immediate grant, and if he has been drawing an invalidity or old-age pension, the widow may continue to draw half and children under age a fifth of such pension Contributions are divided into eight categories according to income, ranging from 6*d* a month in apprentices to 6*s* a month in the highest income category. All contributions cease at 65 but benefits continue

THE SALE OF NARCOTICS

The ministry of health has issued new regulations for the sale of narcotic drugs, or as they are called in Rumania, stupeficiants. Henceforth chemists may sell narcotics such as morphine, ether, chloroform, opium, and cocaine only on a doctor's prescription The prescription must bear the name and address of the doctor and of the patient, and if unusually large doses are prescribed the reason for this must be stated on the prescription All prescription forms used for narcotics must bear the stamp of the nearest medical chamber, which serves to prove that the prescriber is a duly registered and qualified doctor Prescriptions for narcotics must be filed by the chemists and preserved for five years.

THE DEATH SENTENCE

By the new constitution a death sentence is imposed for attempts against the life of the ruler, members of the royal house, heads of foreign countries visiting Rumania, or state dignitaries, and for political murders or murders with robbery. The sentence is carried out by shooting, only the judges being allowed to witness it, and must not be delayed for longer than 48 hours after the failure of the appeal, if any. An exception is made in the case of pregnant women, who are not executed until after labour.

NATURAL CAUSES OR PROFESSIONAL NEGLIGENCE?

On Jan 12, 1936, a Sibiu laryngologist, Dr. S, was called to see a young lady who complained of sore-throat. He diagnosed simple tonsillitis with incipient peritonsillar abscess on the right side, and ordered cold compresses. On the 14th he incised the right peritonsillar tissue under ethyl chloride general anæsthesia, and on the 17th he incised a second abscess that had appeared on the left side, also under ethyl chloride. A little pus was evacuated and Dr S ordered hot fomentations and gave an injection of Omnadin. The girl's parents were worried about her general condition and suggested a second opinion, but Dr. S. would not agree On the 20th Dr. S. reopened the abscess on the left side and inserted a piece of gauze about an inch long to keep the wound open. He gave the patient an injection of morphine gr. 1/[illegible] and scopolamine gr 1/200 and left the house, after which the girl combed her hair, talked a little, and fell asleep She woke up about two hours later and began to tear at the collar of her nightdress Her breathing then became more and more difficult and finally stopped. When Dr S was called he was seen to remove the gauze drain from the wound At the postmortem an abscess was found behind the incision on the left side and death was ascribed to toxæmia, with the patient's bad general condition and the action of the morphine as contributing factors.

The girl's parents thereupon charged the doctor with malpractice and sued for damages. In the county court the expert witnesses for the prosecution held that Dr. S's treatment had been inadequate in that he had done nothing to raise her resistance beyond giving one dose of omnadin, that his incisions had been made at the wrong time and at the wrong place, that he ought to have used local rather than general anæsthesia, that the introduction of a gauze drain into so small an incision was unsound, that in a case such as this both morphia and scopolamine were contra-indicated, and that Dr. S. had acted unethically in refusing a second opinion. The experts also maintained that there was no evidence at the postmortem examination of toxæmia or morphine poisoning, and that the froth that had been found in the bronchi, together with the history, pointed clearly to death from asphyxia, probably due to the gauze drain having blocked the larynx while the patient was under the influence of narcotics, and Dr. S.'s anxiety to remove the drain supported this diagnosis. The court accepted this evidence and gave it as their opinion that the dose of morphine given had been dangerously high in a patient weakened by illness and repeated general anæsthetics and that Dr. S. had been to blame for not either staying with the patient or at least instructing the attendants to stay with her, especially when she had had a presentiment that she would choke.

Dr. S. was found guilty of manslaughter and sentenced to a month's imprisonment, execution of sentence being suspended for three trial years. He was also ordered to pay a fine of 3000 lei, damages to the father of 150,000 lei and 70,000 lei costs, about £300 in all. In the appeal, which has recently been heard in the high court, Dr. S. was acquitted of criminal negligence but the court raised the damages to 200,000 lei.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

FERTILITY OF PARENTS AS MEASURED BY LOSS OF OFFSPRING

THE relationship of the age of parents to their reproductive capacity was broached directly by Raymond Pearl in a paper written two years ago. This study showed that fertility in females declines continuously with advancing age for every age group of father, and that in males fertility is at a maximum in the age group 25–29, increasing up to that age group and decreasing from it. This pattern was found to be evident for every age group of mother.

Dr. J. Yerushalmy has now completed a study made under the joint auspices of the division of maternity, infancy and child hygiene of the New York state health department and by the National Institute of Health, in which he has measured fertility by the loss of offspring of parents at different ages. The use of a rate of total pregnancy wastage was considered and rejected both because of the difficulty of securing accurate figures for abortion and miscarriage, and because these latter accidents are often due to deliberate action that is unrelated to fertility.

The relation of stillbirths to age of parents is shown in the accompanying table. It will be noted that there is clearly an association between the stillbirth rate and the age of each parent. The relationship is shown by Dr. Yerushalmy to be independent of the correlation of the ages of the two parents. Stillbirth rates are found to vary in the form of a U-shaped curve with the age of either parent when the age of the other is kept constant. The pattern is similar for male and female offspring. Dr. Yerushalmy points out that since he is considering stillbirths rather than neonatal deaths, the effect of the environment is reduced and that the statistical conclusions from this very large sample reinforce the suggestion which he has made previously, that the *low neonatal mortality in the offspring of fathers* aged 25–29 might be due to a biological factor—a suggestion upon which THE LANCET commented on Oct. 29, 1938.

Dr. Yerushalmy then turns to the evidence to be derived from premature births, which he finds interesting both because premature births constitute the major part of stillbirths and neonatal deaths and because of the presumption that many premature births are due to the fact that the fœtus is not strong enough to be carried to term. Since reliable information on the incidence of premature births for the entire country was not available, Dr. Yerushalmy analysed the 82,000 odd births occurring in New York state, exclusive of New York city, in 1936. He found that premature birth by age of mother, as well as by age of father, followed a similar trend to that of the stillbirth rate with the lowest incidence in the intermediary age group. Again the differences in incidence by age of one of the parents are independent of the age of the other parent.

Finally Dr. Yerushalmy shows that premature births are not the only factors responsible for the observed variation of the stillbirth rates and neonatal rates with age of parents by showing that late fœtal and neonatal mortality rates for full-term births are clearly related to age of parents. The pattern was similar to that of total stillbirth rates, except that in the case of full-term birth the rates for young fathers were relatively low.

SKIN TESTS FOR TUBERCULOSIS

At the 37th annual meeting of the New York Tuberculosis and Health Association, held in New York on March 2, several papers were devoted to the

STILLBIRTH RATES PER 1000 TOTAL BIRTHS, BY AGE OF PARENTS (U.S. BIRTH REGISTRATION AREA, 1931–35)

Age of mother	Age of father										
	Under 20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55 and over	Not stated	Total
Under 20	40·0	35·1	31·8	33·3	37·6	37·9	43·0	42·8		70·3	33·4
20–24	40·3	31·3	27·5	26·6	30·6	31·5	34·6	37·0	42·5	76·9	30·4
25–29	35·3		28·4	28·2	29·6	32·3	35·2	38·3	36·4	92·5	29·9
30–34	46·8		36·3	32·1	34·3	36·4	38·5	42·7	46·1	105·8	35·1
35–39	61·0		51·0	43·3	42·7	40·1	47·9	50·0	51·3	117·9	45·9
40 and over	59·3			55·5	55·0	57·3	60·9	63·3	64·5	135·3	60·2
Not stated	85·4	72·7	72·2	64·9	68·6	88·5	106·4	116·4	84·2	133·6	125·6
Total	40·2	35·1	28·8	30·0	35·7	43·2	48·8	52·3	52·3	91·3	35·7

question "Is the tuberculin test worth while in case finding?" Certain epidemiologists in this country[1] have questioned the use of mass skin testing in the provision of an epidemiological index. The speakers at this conference (Esmond R. Long, Bèla Schick, B. S. Pollak, and Robert E. Plunkett) recognised the importance of a test substance of specificity, stability, and constant potency, but it was clear that none of them was seriously concerned lest the tuberculin test should fail to uncover cases of active tuberculosis. Whether the test is of value as an administrative procedure, in addition to radiography, depends on considerations outside the field of pure biology, as Dr. Plunkett pointed out. It may be simpler to radiograph all who come to the clinic when (1) most of them react positively to tuberculin; (2) it is a serious hardship to ask the visitor to come twice to the clinic instead of once; and (3) radiography is desirable for other purposes—e g., to detect non-tuberculous diseases of the chest. The older the group tested and the higher the morbidity of the group, the smaller is the value of the tuberculin test as a "screen" to save expense in radiographic diagnosis.

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[1] See especially Lumsden, L L, Dearing, W. P., and Brown, R A, *Amer. J publ Hlth*, 1939, 29, 25.

PUBLIC HEALTH

Progress in Ireland

INTRODUCING the estimates of his department in the Dáil last week, Mr Sean T O'Kelly, Minister for Local Government and Public Health, was able to speak with some satisfaction of the improvement in the health of the country in recent years. The mortality from infectious diseases (omitting the figures of influenza) showed a drop from 941 in 1935 to 574 in 1938. There was a slight increase in the number of deaths from diphtheria in the year 1938 over the previous year, but the number of deaths in 1938 (308) was much less than the average (373) in the five years 1932–36 The number of deaths from scarlet fever has shown a remarkable drop in recent years: it was 173 in 1936, 128 in 1937, and 80 in 1938 An outstanding feature of the statistics for the year was the absence, for the first time, of any death from or any notification of typhus fever The deaths attributed to typhoid in 1938 were 47, which is the lowest number on record. There has also been a gratifying reduction in the mortality from puerperal sepsis From 1927 to 1936 it averaged 1·49 per 1000 births; in 1937 it fell to 0 9; and in 1938 to 0 7.

There was a reduction in the number of infant deaths in 1938 as compared with 1937 and 1936, although it was greater than in 1934 and 1933. The rate in 1934 was 63 per 1000 births, in 1936 it was 74, in 1937 it was 73, and in 1938 it was 66. The Minister referred to increased activity in child-welfare and maternity schemes, and also in medical inspection of school-children. The total number of children examined in 1937 was 124,256 The Minister did not state, however, what proportion this number bore to the total on the school-rolls School meals are provided in a great many urban and rural areas, the total number of meals supplied during the year ended March 31, 1938, being approximately 2,800,000

Steps have been taken to enforce compliance with the provisions of the Milk and Dairies Act, and during the past year 1119 orders refusing registration were issued by local authorities. Notwithstanding the optimistic statement of the Minister there is reason to think that in many rural areas the act has not had at all the effect that was hoped In some, after an initial inspection of the milk-producer's premises, little further notice is taken, and the standard of cleanliness tends to lapse again Even more discouraging is the fact that certain district justices dealing with prosecutions under the act treat proved offences as trivial.

The Minister dealt with the policy of his department in regard to the distribution of sweepstakes funds for hospital purposes. The future hospital requirements of Dublin city are to be met by the enlargement or replacement of three existing hospitals (the Richmond, the Mater Misericordiæ, and St Vincent's) and by the amalgamation of three others (Mercer's, Sir Patrick Dun's, and the Royal City of Dublin). He stated that the arrangements for the amalgamation are well advanced and that he hoped to be able to introduce a bill for the purpose in the early summer.

A Domiciliary Service for Infants

The Paddington borough council, wishing to establish a general domiciliary medical service for children under 12 months of age as part of their scheme for combating infantile mortality, have been informed by the Ministry of Health that such action is debarred by a subsection of section 251 of the Public Health (London) Act, 1936, which says "Nothing in this subsection shall authorise the establishment of a general domiciliary service by medical practitioners" The council had previously submitted the following details of their proposal:—

(1) Before a child is admitted to the scheme the application of the parent or guardian must be approved by the council.

(2) A child shall only be admitted to the scheme under the age of 14 days, provided, nevertheless, that a child removing into the borough from another district may be admitted to the scheme within 28 days of such removal.

(3) The child's parent or guardian shall not be of a higher economic status than that of persons coming under the National Health Insurance Act, 1936, and where practicable there shall be recovery by the council of the expenses involved in any individual case according to the means of the parent or guardian.

(4) The terms of service for medical practitioners shall be framed generally on the lines of part I of the first schedule of the National Health Insurance (Medical Benefit) Regulations, 1936, with any necessary modifications.

(5) The medical practitioner who shall be selected by the parent or guardian personally shall agree to supply all necessary medicines, and shall furnish the medical officer of health with a report on the health of the child every three months, unless the child is attending a welfare centre of the council.

(6) The medical practitioner shall be paid 5s per quarter per child on his list

The council are endeavouring to enlist the support of other metropolitan authorities to press for amending legislation to remove this difficulty.

LETTERS TO THE EDITOR

ANÆSTHESIA IN WAR-TIME

SIR,—Several articles have recently been published *on the subject of war wounds and their treatment*, but little has been said about anæsthesia in war time. An efficient anæsthetic service must be considered from three aspects: (1) the clearing zone, (2) the evacuation zone, and (3) the base hospital and at sea; there is also the main hospital situated well away from the firing line but vulnerable to attack from the air.

To be efficient and safe anæsthetic technique must be simple. Medical officers should be conversant with the drugs that are likely to be used, and the apparatus should be light, portable, and capable of being dismantled quickly if necessary. I do not propose to deal with the different types of administration that can be given in the main hospitals, but to survey the needs and limitations of anæsthesia for emergency cases under difficult circumstances.

For the *clearing and evacuation zones* intravenous anæsthesia is the best type in an emergency, because the apparatus is so easy to carry about. A suitably shaped case for the medical officer should contain 10 c.cm. and 5 c.cm. syringes with size 14 needles, which should be sterilised beforehand or carried in a case which keeps them sterile; also a reasonable number of ampoules of an intravenous drug with sterile distilled water, and, if possible, a small flask of methylated spirit. In addition another small case could be worn containing lint, bandages, emergency props, tongue forceps, and so forth, together with emergency drugs such as morphia, Coramine, Omnopon and scopolamine. As far as possible these drugs should be in tablet form. Pentothal in doses of 3 or 4 c.cm. will enable an acute hæmorrhage to be stopped or a gaping wound to be plugged without upsetting the patient more than necessary. If given by skilled administrators and in small doses at a time intravenous anæsthesia is as safe as any other type in use today. Its only disadvantage in war-time is that the syringes and ampoules may get smashed, but a case lined with shockproof material such as Sorbo rubber should protect them. If an inhalation anæsthetic is to be used, ether, chloroform and ethyl chloride with the necessary masks and apparatus will have to be kept in the clearing stations and evacuation zone; an additional disadvantage is that the administration of inhalation anæsthetics takes time and that their use may result in chest symptoms.

Any equipment for use in the *base area* should also be portable and easily dismantled, as should the means of giving intravenous saline and glucose. A modern apparatus capable of standing up to considerable man handling and wear and tear should be evolved, similar to Boyle's apparatus which was standardised and made suitable for the use of all grades of anæsthetists during the late war. Such types of apparatus as the McKesson, Boyle, and Walton are easy to manipulate. Those that can be made of metal and have parts which are easily replaceable should be used.

The *main hospital*, situated well away from the front line but *not* necessarily out of the range of long distance bombers, would have the same type of apparatus as in peace time. One point that should be raised is the type of apparatus suitable for the administration of anæsthetics to gas casualties. So far as is known, there are no contra-indications to the use of intravenous anæsthesia in these cases. People suffering from gas poisoning need all the air and space that they can get; therefore oxygen chambers and resuscitation apparatus similar to that used on American fire engines and ambulance cars should be part of the equipment kept in these main hospitals, and also at the base hospitals if a portable type can be designed. The Americans have standardised one of the many different types of such apparatus. Probably a standardised type could be devised in this country which could be as easily turned out as is the standardised motor-car.

It is essential that anæsthetics should be administered by experts or at least by men who have had a thorough postgraduate training in this subject. During the late war it was noticed that chloroform anæsthesia was unsuitable for persons suffering from wound shock. It was the favourite anæsthetic of the uninitiated, but the case mortality rate from amputations through the upper half of the thigh under chloroform or chloroform and ether was over 90 per cent. in the clearing stations. Under gas and oxygen the rate was reduced to less than half this figure. *As in civil life, the employment of skilled men* wherever possible results in lowered mortality.

The drugs used must necessarily be those which can be manufactured in this country, and this applies especially to the barbiturates, the morphia group, and also to the cardiac stimulants. Ether, chloroform, ethyl chloride, and divinyl ether can be obtained if necessary, *but the simplest and safest type of inhalation anæsthetic is* gas and oxygen, with the addition of ether if necessary. I would strongly urge (1) the provision of a standardised portable anæsthetist's kit for use in the field; (2) that apparatus at the base hospitals should be easy to dismantle and should be packed in well lined cases, as these are liable to be thrown about on lorries during a hasty evacuation; (3) that in times of emergency the anæsthetic apparatus provided should be narrowed down to at the most four uniform designs; (4) that the problem of the most suitable anæsthetic for persons suffering from gas poisoning should be seriously considered.

I am, Sir, yours faithfully,

RONALD JARMAN.

New Cavendish Street, W.1, April 3.

OCULAR MANIFESTATIONS OF GENERAL DISEASE

SIR,—In looking through your interesting account of the discussion at the Medical Society of London on March 27—at which I was unable to be present—I failed to find any mention of many manifestations in the eye, which are connected with general diseases or abnormal conditions. In fact, possibly from want of time at the meeting, there was little allusion to many of the various ocular manifestations due to syphilis, tuberculosis, gonorrhœa and especially the local troubles (iritis, &c.) connected occasionally with "gonorrhœal rheumatism" and other pseudo-rheumatisms, whether depending on focal sepsis or not. I saw no reference to eye states connected with rosacea and gastric disorders, such as rosaceous conjunctivitis and keratitis, which may escape correct diagnosis at times when the nasal and facial rosacea is not very obvious. Nor did I find anything about phlyctenules and their probable relation to allergic conditions, not always connected with tuberculosis. The causes of cataract doubtless form a too large subject in themselves and the corneal

(Kayser-Fleischer) ring sometimes present in progressive hepatolenticular degeneration is excessively rare. We never here, I believe, meet with keratomalacia, at present, resulting from vitamin-A deficiency, but it has been claimed that Sjögren's syndrome may be benefited by long-continued treatment with vitamin A (Vogan). Anyhow, it is clear, chiefly owing to Sjögren's observations, that a condition of keratoconjunctivitis sicca sometimes forms part of a more widely spread disorder with chronic inflammatory changes in the salivary glands, dryness of the mouth, &c., which for convenience may be designated "Sjögren's syndrome" (compare F. P. Weber and A. Schluter: *Dtsch. Arch. klin. Med.* 1937, **180**, 333). I am, Sir, yours faithfully,

London, W. 1, April 1. F. PARKES WEBER.

THE SHIPWAY MACHINE

SIR,—I read with great interest the description in your last issue, by my friend Dr. F. Barnett Mallinson of the Shipway "closed-circuit" machine.

I am glad that Dr. Mallinson does not describe this apparatus as either new or original, since it is quite obviously merely a rearrangement of existing machines. As such, unfortunately, it embodies all their imperfections, the most important of which may be briefly stated as follows: (1) the flow-meters are inaccurate; (2) the joints and valves are not airtight, and in particular the latter are not constructed so as to allow any delicate variations in the flow of gases passing through them; (3) the directional valves are either not efficient or are wrongly placed in the circuit, or both. These faults in existing anæsthetic machines are not of mere academic interest, for with unreliable flow-meters and directional valves, inefficient soda-lime canisters, and an apparatus which tends to embarrass rather than to aid the respiratory system, the anæsthetist is severely handicapped. I know it may be objected that the patient should be the gauge, but this, though true, is only partly so.

With closed-circuit technique an accurate, flexible, correctly designed machine is essential to achieve good results, and it is no doubt because of the lack of such a machine that this technique has made so little headway in this country. Convinced as I am of the value of the method, I cannot believe it beyond the wit of man to produce such a machine, and there appears to be ample scope for a combination of physiologist-anæsthetist, practical engineer, and surgical-instrument maker to design one.

Dr. Mallinson has attempted no solution to this problem, but he is, I am sure, no more complacent about it than I. Though I have no solution to offer I do not despair that some researches at present in progress will eventually provide us with an accurate flow-meter and a leak-proof valve.

I am, Sir, yours faithfully,

Harley Street, W.1, April 3. R. BLAIR GOULD.

ABRIDGED LIFE TABLES

SIR,—In reply to Mr. Benjamin's letter in your last issue, Dr. Hyder and I were concerned with a clearly defined question—namely, did Snow's empirical method of constructing an abridged life table give a satisfactory result under modern conditions of mortality? We made no "tacit suggestion" that it was the best method and Mr. Benjamin has no justification for drawing such a conclusion. We were, in fact, not concerned to compare it with other methods; but seeing that it was a convenient one, which a medical officer might feel inclined to use, we wanted to know whether it would still give him the right answer. For the country as a whole we found that it did.

Mr. Benjamin has perhaps forgotten that Snow himself, in his original publication, tested this method in its application to specific local areas—London, selected healthy districts, county boroughs and rural districts. He found that it gave uniformly good results under their very different mortality experiences. In addition it must be remembered that Snow's equations were based upon the mortality experience of England and Wales in 1910–12 and we applied it to the experience of 1930–32. We were satisfied that if the considerable changes in the mortality-rates of England and Wales between those dates did not invalidate the procedure, then it was extremely unlikely that similar differences in mortality between one area and another at the same date would lead to material errors, especially with Snow's previous tests before us.

In the hope, however, of removing Mr. Benjamin's own doubts I have, since the publication of his letter, made such a test as he requires. I have applied Snow's method to the male mortality experiences in *1930–32 of (1) the county boroughs of Durham and* Northumberland, and (2) the rural districts of the eastern counties. The contrasts in mortality between them are extreme, but in each I find that Snow's method reproduces the survivorship column of the complete life table to the same order of accuracy as was previously shown for the whole country.

Personally I am satisfied that medical officers with an affection for abridged life tables need not take Mr. Benjamin's strictures to heart.

I am, Sir, yours faithfully,

A. BRADFORD HILL.

London School of Hygiene and Tropical Medicine,
Keppel Street, W.C.1, April 3.

INSULIN SHOCK AND CONVULSION THERAPY IN THE TROPICS

SIR,—We have read with great interest Govindaswamy's article in your issue of March 4. We began treatment by insulin shock and Cardiazol convulsions in the summer of last year and our shorter experience differs in some respects from his findings in India. We have so far treated 20 patients with insulin shock and 30 with cardiazol; and though the time since treatment is too short for any statement about the proportion of recoveries, we can say that many of our patients are now back at home and carrying on their former occupations. Our figures seem to compare favourably with those from European countries.

We cannot agree with his statement that "insulin shock in patients in the tropics is very severe, uncertain in its effects, occasionally fatal in spite of all precautions, and hence much better avoided." In our short experience with insulin we have not encountered any reactions other than have been described by European workers. We have had no fatalities from the treatment, and on the whole our patients improved in physical health and put on weight. (It should be added that patients with heart and liver trouble were excluded from our series.) We prefer insulin-shock therapy for schizophrenics with paranoid ideas and we give it also in the catatonic forms following a few cardiazol convulsions. With cardiazol we have not found it necessary to limit injections to one or two per week, as suggested by Govindaswamy. We have given the male patients three, and the female two, injections weekly, with no untoward effects. We use cardiazol in catatonic schizophrenia and in non-schizophrenic disorders

OTTAWA CIVIC HOSPITAL

The climatic conditions of the south of Iraq are not very different from those of India, and the same tropical diseases are prevalent. Our patients' nutrition, however, was generally good and they were never "undernourished and weak", which may explain the difficulties that workers in India have encountered. We are, Sir, yours faithfully,

HANS HOFF,
J. A. SHABY.

Unit of Mental and Nervous Diseases,
Royal Hospital, Baghdad (Iraq), March 17.

TUMOURS IN TWINS

SIR,—A number of records have been published of tumours in one or both members of a pair of twins, but there is a divergence of opinion as to the conclusions which can be drawn from such reports. I am therefore asking all members of the profession who have had occasion to diagnose or treat tumours, either benign or malignant, in either one or both of a pair of twins to communicate with me, giving the following information as far as possible.

In each twin: name, sex, age or age at death, whether tumour present and if so its site, type and age of onset. Was there operative or pathological confirmation of the diagnosis? If the twins were of the same sex, were they so similar in appearance as to cause confusion in identity, or were they *dissimilar?*

Cases in which one twin only was affected are just as important as those in which both twins had a tumour. Names will be kept confidential, but will be useful in preventing duplication where one case has *been treated by several doctors.* The age when the tumour began, and the age at death or the present age if the twins are *still living* are of *importance also.* If the tumour began in twin 1 six months ago, and twin 2 has not yet shown it, the short time must be considered in evaluating the record. But if the second twin has lived twenty years without developing the tumour, that point should be noted.

I am, Sir, yours faithfully,

MADGE THURLOW MACKLIN,
Assistant professor of histology and embryology,
Medical School, University of Western
March 22. Ontario, London, Canada.

STORAGE OF RADIUM IN WAR-TIME

SIR,—Radium is not only a valuable but also a very dangerous substance. If, during an air raid, any quantity of radium was dispersed by violence, the buildings in which it was dispersed, *as well* as a considerable area surrounding the buildings, would be for many years to come a menace to any people who inhabited them. One hundredth of a milligramme would probably be fatal if inhaled.

It is therefore necessary that steps should be taken to provide for the safe custody of radium in war time, and a conference has been held between representatives of the British X ray and Radium Protection Committee, King Edward's *Hospital Fund for London,* the Ministry of Health and the National Radium Commission, to consider this matter. The National Radium Commission is compiling a register of owners and holders of radium, with a view to satisfactory arrangements being made. It earnestly requests all persons who have radium in their custody or possession (including the responsible official of institutions holding radium) to notify the commission, stating the amount of radium held.

I am, Sir, yours faithfully,

GEORGE F. STEBBING,
Secretary, National Radium Commission.

18, Park Crescent, Portland Place,
London, W.1, March 31.

CLOSED TREATMENT OF COMPOUND *FRACTURES*

SIR,—In "Medical Organisation and Surgical Practice in Air Raids" which was reviewed in your columns last week, there is a reference to the treatment of air raid casualties in Barcelona by the closed plaster of paris method. The treatment is somewhat adversely criticised, and as my name is specifically mentioned in connexion with it I should like to make some observations on the statements made by the authors.

It is impossible within the compass of a letter to discuss the subject fully. I have done so in my book ("El Tractament de les Fractures de Guerra") and I hope soon to be able to submit for publication a paper which will give some detailed case records. But it is stated by Colonel Cowell and Colonel Mitchiner that among cases treated by this method there is "an undue loss of life and limb" and "an undue incidence of tetanus and gas gangrene."

I would ask first to be allowed to quote the final sentence of my book, which reads: "It is a great mistake to believe that it is enough to encase a limb in plaster to obtain the benefits of the Orr treatment." The guiding principle of the treatment as I applied it was a bold excision of all dead and dying tissue, a wide exposure of the wound, followed by the application of a plaster cast. Because of the novelty of covering a wound with a plaster cast, this feature of the treatment receives all the publicity; but it is obvious that a plaster cast is no more a substitute for inefficient surgery than is any other form of after treatment of the wound, such as Carrel Dakin irrigation. The results of inadequate primary surgical treatment might pass unnoticed when the wound is encased in plaster, were it not that pain and general *signs and symptoms give ample warning that all* is not well and that the cast needs removal and the wound further surgical treatment.

In reply to the specific charges made by the authors against the method as used in Barcelona, which I have quoted above, I submit the following figures. They refer to cases of compound fracture of the limbs produced by aerial bombardment only; all were treated in the General Hospital of Catalonia under my direction by the methods described in my book.

Total cases	633
Deaths	6
Amputations	1*

* Fatal and included in the 6 deaths above.

The following is the analysis of the causes of death:

Pneumonia	1
Pulmonary embolus	1
Septicæmia	1
Shock (death after 18 hours)	1
Gangrene	1†
Gas gangrene	1

† This case had a rupture of the popliteal artery and compound fracture; conservative treatment was tried; ordinary wet gangrene developed; amputation was performed. It is the case referred to above.

There was no case of tetanus.

In order to avoid possible misconception, I should make it clear that amputation was performed as a primary treatment in certain cases in which there was obvious gross and widespread destruction of the limb, but, apart from the one case referred to above, there was no case of amputation becoming necessary through the failure of conservative treatment.

I am, Sir, yours faithfully,

J. TRUETA RASPALL,
Late Director of Surgery, General Hospital
of Catalonia, Barcelona.

Eton Avenue, N.W.3, April 3.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

BY MEDICUS, M.P.

IN the last fortnight there have been two debates in the House of Commons which dealt with malnutrition. The first was that on tuberculosis in Wales, the discussion of which centred on malnutrition, bad housing, and poverty in general The second was that arising on the Consolidated Fund Bill on which the Labour opposition chose the subject of malnutrition as the basis of the discussions. The form in which discussions arise in the House of Commons is often puzzling to those outside its ranks, but is in reality quite simple. One of the main functions of the House is voting money for the different public services and it is an established procedure that before voting "supply," as it is called, the members of the House have the right to the redress of grievances, or at least to the right of ventilating grievances in the hope of getting them redressed.

It is a long step in advance when malnutrition of children and adults is regarded as a grievance calling for action by the Government And in the debate on malnutrition which was opened by Mr. Lees-Smith followed by other speakers, replied to by Mr Walter Elliot—at half-time so to speak—and wound up by Mr. Kenneth Lindsay, the assumption that malnutrition was a matter of state concern and state responsibility was accepted without demur. Perhaps the dangerous days through which the nation is travelling makes us all more conscious of the importance of good physical conditions. It might indeed be worth while considering whether the improvement of nutrition at the present moment should not be regarded as just as important as the navy, army, air force, or A R P. "Social defence" by improved nutrition may be added to civil defence by national service.

In the debate on nutrition, in which both sides accepted the views of Sir John Orr with practically no disagreement, an important matter arose at the end of the speech of Dr. Haden Guest. This member referred to a statement made by the then Minister of Agriculture on July 4, 1938, when introducing the Milk (Extension and Amendment) Bill The Minister then said that the limit of grant paid by the Government for the milk-in-schools scheme would be increased from £500,000 to £750,000 to allow for the payment of grants for the maternity and child-welfare milk schemes as well as for the various extensions of the milk-in-schools scheme which are contemplated.

Dr. Haden Guest asked whether it was a fact that none of the extra quarter of a million for milk for expectant and nursing mothers and for children below school age had in fact been spent. The Minister of Health did not answer this question in his half-time reply and when pressed by Dr. Guest gave a somewhat evasive reply, saying: "I do not think it has been possible to extend these schemes, and to that extent, at any rate, that money would not have been expended. But I would not like the hon. member to take that reply as definite. . . ." The hon member evidently did not take this as definite, for in the following week he put down three questions to the Minister of Agriculture The answers to these questions made it plain that the extra quarter of a million spoken on July 4, 1938, had not in fact been spent The reason is more disconcerting still: it is that at a meeting of representatives of the Ministry of Health, Board of Agriculture, Milk Marketing Board, and Central Milk Distributive Committee held on Sept. 22, 1938 (as reported in *Milk Industry* for October, 1938, it had not been possible to come to agreement with the distributors on this scheme

The consumer was to pay *2d* a pint (*1s. 4d.* a gallon) and the distributor to get *8d* a gallon for his services The Milk Marketing Board was to get ordinary wholesale price, about *1s. 4¼d* a gallon, the total cost being therefore *2s 0¼d*. The difference of *8½d.* was to be shared between the Government and the Milk Marketing Board. But agreement was not reached. The money voted by Parliament on the strength of the Minister's statement on July 4, 1938, was not spent and any local authorities who did spend money were not helped by this Government grant.

In plain English a dispute between the Ministry and the interests concerned has been allowed to hold up a vital national service to aid expectant and nursing mothers and children below school age. Here is a case where the "supply" having been voted by the House of Commons the money is not spent because the Ministry does not push on with its work with sufficient force It is a serious matter that so many women, young babies, and toddlers should have been deprived of milk ex-hypothesi necessary for them in their undernourished condition. What is even worse is the general suspicion engendered that even the best-sounding pronouncements by Ministers may be, if they are not kept up to the mark by constant debate and questioning, very little more than window-dressing.

* * *

Under section 44 of the Medical Act, 1858, the General Medical Council and the branch councils—i e, those of England, Scotland and Ireland—have to present their accounts to the House of Commons annually in March This has just been done. But the account is not a parliamentary paper—i e, one which can be obtained by any member of Parliament in the Vote Office, which is a kind of parliamentary paper-shop in the central lobby. Nor are they ever an unparliamentary paper. They are merely "laid on the table," and only one copy is available, carefully locked up in the library and to be consulted by those who know how to dig it out. An inspection of the accounts yields no obvious reason for secrecy, so presumably this "laying on the table" procedure is due to lack of interest in the figures and to a desire for economy It may be worth while, I think, to print the figures in some easily accessible form

The receipts of the G.M C. for 1938 were £10,932 and the expenses the same amount, including £320 "set aside for visitation and inspection of examinations" Of the receipts the three branch councils contribute £7053, the British Pharmacopœia pays £250 for office accommodation, £1655 comes from registration fees of colonial and foreign medical qualifications, and £955 from interest on investments, while the sale of publications brings in £1070. On the expenses side fees and expenses of members absorb £3088, printing £2335, office expenses £3277, the correction of registers £491, and legal charges £920. The accounts of the English, Scotch and Irish councils are separate and the larger part of each of them is made up of registration fees In 1938 the figures were as follows: English Council's registration receipts £6770, interest on investments £1566, Scottish Council's registration receipts £3289, interest on investments £574, Irish Council's registration receipts £1017, and interest on investments £94 Most of these receipts go in a contribution to the income of the G M C, and the English Council pays one third of the expenses of the G M C office, which it shares The contribution of the councils to G M C expenses is English Council £4228, Scottish Council £1959, and Irish Council £867

Under the Dentists Act of 1921 the Dental Board present their accounts annually to the House of Commons Fees for registration in 1938, including those for retention in the register, amounted to £48,099, sales of publications to £513, and interest on investments to £1643 Dental Board expenditure for fees and travelling expenses is £1352, and for Dentists Register, minutes, &c, and general is £898, salaries and wages are £5426, £1200 was reserved for pension scheme, office expenses were £1591, law expenses £1787, income tax £481, miscellaneous £344, lectures (in dental schools) £68, educational grants £19,000, dental health allocation £5000, and grants for research £3000, leaving a balance of £1072

One interesting feature of these accounts is that the income of the Dental Board is more than four times as large as that of the General Medical Council, their office expenses are very much less and while the Dental Board show payments of £31,000 for purposes of education and research the G M C make no contribution under this head The Dental Board spend this money on education and research because it is laid down in the act that they must do so No similar clause exists however in the Medical Act which omitted to secure for the council the substantial income it would have derived from exacting an annual retention fee from doctors

FROM THE PRESS GALLERY

The Camps Bill

In the House of Commons on March 29 Mr Elliot, Minister of Health, in moving the second reading of the Camps Bill, explained that the bill provided for the building of approximately 50 camps, of which 7 would be in Scotland and the remainder in England and Wales These would be used, first, as a supplement to the accommodation available for evacuation from the more vulnerable areas, and secondly, as school camps for children in peacetime He imagined that education authorities would not be slow to realise the health and educational value of the scheme, which would be an important step in the national campaign for better health

At present, said Mr Elliot, 20 permanent camps for school-children were provided and run by local education authorities in England and Wales, accommodating between them about 1100 children About half of these camps were used for undernourished and weakly children from the poorer urban homes They usually stayed for about a fortnight and no charge was made The remaining camps were used to give groups of normal children drawn from town schools an opportunity of doing their school work for a week or two in healthy surroundings Here parents were expected to contribute towards the cost of food In addition 16 school camps had been provided in the north of England and in South Wales with the aid of grants from the Commissioner for the Special Areas, the total accommodation of these larger camps being roughly 1200 In these preference was given to children whose parents were unemployed There were no school camps at present in Scotland, but several education authorities were considering them In 1938 seven Scottish education authorities provided 59 holiday camps of varying size Over 9000 children passed through those camps, the health value of which had been remarkable In one the first batch of campers gained on an average two pounds in weight, while the second batch gained no less than five pounds during their stay

The camps proposed under the new bill would be capable of accommodating something like 200,000 children for a fortnight each year, if they were used for six months in the year and no more But the camps would be heated and it was hoped that they would be used winter and summer The central authorities for carrying out the proposals would be the Minister of Health and the Department of Health for Scotland. The actual work of erection and management was to be carried out by two companies operating on a non-profit basis, one for England and Wales and one for Scotland

Mr Noel Baker's only complaint was that the bill was on far too modest a scale and he gave it the Labour party's blessing—Mr Mander did the same for the Liberal party

Dr Haden Guest emphasised the great urgency of building these camps The trouble with evacuation camps would be the provision of water supply and sanitary and cooking accommodation Their planning should be on a big scale, and their organisation should be capable of rapid expansion—Sir Henry Morris-Jones voiced the apprehension of people in the holiday resorts that their livelihood would be jeopardised by these camps all over the country

Sir Francis Fremantle hoped that the Minister of Health would never allow any of the provisions of the town-planning acts to be overridden, except in very extreme circumstances These camps would involve a danger to health, especially as regards the conveyance of infection, unless they were properly supervised They were to be managed by non-profit-earning companies, but though those in control might have very high ideals they would not necessarily have much interest in the details of public health This was really a vital matter At any time there might be an outbreak of disease in one of these camps which might carry off half the children It was easy for laymen to say that that was incorporated in the public health of the district, but if the camps were going to be placed in rural areas the rural medical officer of health would probably not be used to dealing with such problems on a big scale They needed a man of fairly wide experience, and the camps should therefore come under the county medical officer of health

Local Government Superannuation

In the House of Commons on March 29 Mr Bernays, parliamentary secretary to the Ministry of Health, moved the second reading of the Local Government Superannuation Bill Its purpose he said, was to remedy certain mistakes in the Local Government Superannuation Act, 1937, and the similar act applying to Scotland For practical purposes the English act came into operation on April 1, 1939, and the Scottish act on May 16, 1939 It had become apparent that in minor points the language of the acts did not carry out the intentions of Parliament, and that they would prejudice an appreciable number of employees of local authorities Both the acts of 1937 provided for reciprocal arrangements between England and Scotland, but the point was unfortunately overlooked that the effect of the repeal of the act of 1922, and its replacement by separate acts for the two countries, was that in general only service under a local authority in the country in which the employee was serving could be reckoned for superannuation

The next point referred to England only The superannuation of persons employed in certified institutions for mental defectives was provided for under the Asylums Officers' Superannuation Act, 1909, as extended by the Asylums and Certified Institutions (Officers') Pensions Act, 1918 These employees were excluded from the act of 1937 with one exception—namely, certain poor law employees who remained subject to the Poor Law Officers' Superannuation Act, 1896 The fact was again unfortunately overlooked that a certain number of poor-law employees exercised an option to transfer to the act of 1922, and since that act would be repealed from April 1, 1939, they would cease to have any superannuation rights That matter was also being set right in this measure.

Medical Advisory Committee on Cancer

In the House of Commons on March 31 Sir **FRANCIS FREMANTLE** asked the Minister of Health whether he was yet in a position to state the names of the members of his medical advisory committee and also the names of the members of the subcommittee which was to advise him on general principles in regard to the treatment of cancer and to consider any questions referred to them by him.—Mr. **ELLIOT** replied : The medical advisory committee is now constituted as follows : Sir Comyns Berkeley, F.R C O.G ; Sir Henry Brackenbury, M D. ; Viscount Dawson of Penn, F R C P., Lord Horder, F R C P. ; Dr Robert Hutchison, P.R C.P ; Sir Kaye Le Fleming, M.D ; Mr Hugh Lett, P R C S ; Sir Ewen Maclean, F.R C O G ; Sir Edward Mellanby, F.R.C P , F R S. ; Sir Frederick Menzies, F.R C.P ; and Prof W Fletcher Shaw, P.R.C O G The committee meets under the chairmanship of Sir Arthur MacNalty, chief medical officer of the Ministry.

I am pleased to be able to announce that invitations to serve on the cancer subcommittee of this committee, which is to advise me on general principles in regard to the treatment of cancer and to consider any questions referred by me to it, have been accepted by the following · Sir Farquhar Buzzard, F R C.P. ; Dr. R Veitch Clark ; Dr Ivor J Davies ; Mr Malcolm Donaldson, F R.C.O G. ; Dr Mary Gilmour , Sir Charles Gordon-Watson, F R C S ; Dr. D G. Greenfield, F.R C S. ; Dr. Reginald Hilton ; Prof. R. E. Kelly, F.R.C S , Prof. E L. Kennaway, F R C.P , F R S ; Sir Frederick Menzies ; Dr J. Ralston Paterson, F.R C S.E. ; Prof J. A. Ryle, F.R C P ; Prof Fletcher Shaw ; Mr H. S Souttar, F.R.C S., Mr G F. Stebbing, F R C S., Prof. M. J Stewart, F R C P. ; Sir Cuthbert Wallace, F R.C S ; and Dr. Constance Wood. Sir Arthur MacNalty will also act as chairman of the cancer subcommittee.

In the House of Lords on March 29 the Royal Assent was given to the Cancer Act.

Scottish Board of Control

On March 30 in the House of Commons, when the Reorganisation of Offices (Scotland) Bill was considered on report, Mr. **COLVILLE**, secretary of state for Scotland, moved an amendment to increase the number of members of the Joint Board of Control from six to seven, in addition to the chairman. The intention, he said, was that the board should now consist of the chairman, who would be an assistant secretary to the Department of Health , two medical commissioners ; one legal commissioner, who would probably be part-time ; one representative of the Scottish Education Department , and three laymen In moving the third reading of the bill, Mr. Colville explained that the opportunity had been taken to extend the Board of Control's power to appoint its clerks, with the approval of the Secretary of State, to the appointment of its secretary.

QUESTION TIME

THURSDAY, MARCH 30

Magistrates and Vaccination Exemptions

Mr. **LEACH** asked the Home Secretary if he was aware that some magistrates refused to sign vaccination exemption certificates on the ground of conscientious objection ; and if he would circularise magistrates to make it clear that a statutory declaration of belief that vaccination would be injurious to the health of the child was the only requirement to be observed by the applicant —Sir **SAMUEL HOARE** replied My attention has recently been drawn to certain newspaper reports regarding the alleged refusal of a magistrate to attest statutory declarations made under section 1 of the Vaccination Act, 1907, and I am having inquiry made I believe it is well understood that the attestation of the statutory declaration by a magistrate is a purely ministerial act and that if a declaration is brought to him at a convenient and proper time he should not refuse to attest it, and on the information before me I do not think there is any need for a general circular to justices on this subject

A R.P First-aid Posts in London

Mr **DUNCAN** asked the Lord Privy Seal how many first-aid parties had been established and knew their posts in the county of London —Sir **JOHN ANDERSON** replied Some 4500 men have been enrolled as members of first-aid parties in the county of London , but I cannot say how far these recruits have been organised as parties and allocated to particular depots Arrangements have been completed with the St John Ambulance Brigade, in conjunction with the metropolitan boroughs, for the collective training as parties of those enrolled for this service who have received preliminary first-aid training A special organisation for this purpose is being set up under the control of Colonel Wallace Benson, who is getting into touch immediately with the medical officers of health of the boroughs in order to work out locally the arrangements for collective training It will be for borough authorities to allocate the parties trained by the brigade to particular depots in their areas

Mr **DUNCAN** · Is there not a great shortage of first-aid workers compared with the need in London , and will my right hon friend do everything he can to increase recruitment, both for first-aid parties and for rescue parties ?—Sir J. **ANDERSON** · Yes, Sir, it is perfectly true there is a marked shortage for those parties Everything possible is being done to promote increased recruitment

Sir **GIFFORD FOX** asked the Lord Privy Seal what was the position of the St John Ambulance Brigade and the British Red Cross Society in the scheme of civil defence , and whether, in providing additional services in this direction, it was proposed to proceed by increasing the membership of these organisations, or by setting up new and competitive organisations —Sir **JOHN ANDERSON** replied The St John Ambulance Brigade and the British Red Cross Society are rendering valuable assistance to the local authorities responsible for recruiting, organising, and training the air-raid casualty services, in the training of volunteers for those services, and they also encourage a number of their trained members, whose age and experience makes them suitable, to enrol with the local authorities in those services for duty in first aid posts or parties Both bodies retain their position as voluntary first aid organisations and there is no question of setting up competitive associations

Mr **DUNCAN** asked the Minister of Health how many emergency ambulance stations had been set up in Kensington and the addresses thereof —Mr **BERNAYS** replied I understand that the London County Council has provisionally earmarked premises at ten points in the royal borough as emergency ambulance stations, but the addresses cannot properly be published until the London County Council has completed the necessary arrangements with the owners

Dr. **HADEN GUEST** asked the Minister of Agriculture (1) whether there had been any extension of the milk-in-schools scheme and of local authorities' schemes for making available to expectant and nursing mothers and to children under school age milk at a reduced price or free since the passing of the Milk (Extension and Amendment) Act, 1938, which increased the sum available for these purposes from £500,000 to £750,000 , and (2) whether the milk distributors had now agreed to operate the draft scheme for the distribution of milk at a reduced price to expectant and nursing mothers and children below school age, scheduled to begin on Oct 1, 1938 ; or whether the refusal of the distributors to operate the scheme, as disclosed at a meeting between the Ministry of Health, Ministry of Agriculture, Milk Marketing Board, and Central Milk Distributive Committee on Sept 22, 1938, *was still holding up the scheme*—SIR R DORMAN SMITH replied Revised arrangements for the milk in schools scheme came into operation on March 1 The principal amendment effected by the new arrangements is an extension of the existing scheme so that children who normally get milk under the scheme may continue to do so when absent from school through illness, provided the parents make arrangements for the milk to be fetched from the school As regards a scheme for reducing the price of liquid milk to local authorities for the purposes of their maternity and child welfare arrangements, I am not in a position to add to the reply that I gave on Feb 20

Dr HADEN GUEST asked the Minister of Agriculture what money had been expended since Oct 1, 1938, to date, respectively, on the milk in schools scheme, and the provision of milk at reduced prices or free for expectant and nursing mothers and children below school age out of the amount of £750,000 made available by the Milk (Extension and Amendment) Act, 1938—SIR R DORMAN SMITH replied Since Oct 1 last £262,000 has been, or is in process of being, paid in pursuance of section 2 of the Milk (Extension and Amendment) Act, 1938, in respect of milk supplied under the milk in school schemes during the months October, 1938, to January, 1939, inclusive No sums have yet been paid under this act in respect of the provision of milk to mothers and to children below school age

Deaths following Use of Convalescent Measles Serum

Mr LEACH asked the Minister of Health where the 37 cases, with 7 deaths, after inoculation with convalescent measles serum, referred to on p 39 of the last annual report of his chief medical officer, occurred whether any inquests were held on the fatal cases, whether his medical officers held an inquiry into the circumstances and if so, would he consider the desirability of publishing their report with a view to such steps being taken as might, if possible, prevent a recurrence of similar disasters—Mr BERNAYS, *parliamentary secretary to the Ministry* of Health, replied 18 of these cases occurred in Oxfordshire, 11 in Essex, 6 in Berkshire and 1 each in Surrey and Sussex With regard to the second part of the question, I am informed that an inquest was not held on any of the fatal cases With regard to the third and fourth parts of the question, investigations into this group of cases, which I am advised are of a highly exceptional character, are still being carried out by the medical staff of my department with the assistance of representatives of the Medical Research Council and other medical authorities, and I am not at present in a position to make any statement about the publication of a report

Mr *LEACH* Can the right hon gentleman inform me why no post mortem inquests were held in respect of these deaths, and does he not think that it is now desirable to investigate further the merits or demerits of this dangerous serum ?—Mr BERNAYS The question of inquests is, of course a matter for the coroner over which my right hon friend has no control With regard to the second part of the question, of course the most careful investigations are being made

FRIDAY, MARCH 31

Vaccination Deaths

Mr GROVES asked the Minister of Health how many death certificates were *received in 1918 on which death was* attributed wholly or in part to vaccination or vaccinia what were the ages of the persons to whom these death certificates referred and which of them would be recorded as deaths from vaccinia—Mr ELLIOT replied Eight such certificates were received in 1938, the ages being respectively 1 month 14 years 16 years 1 month, 3 months 5 months, 4 weeks and 4 months In the first 4 of these the death was classified to vaccinia

MONDAY, APRIL 3

Opticians in R.A M C

Mr RHYS DAVIES asked the Secretary of State for War what were the *qualifications of persons described* as registered opticians Royal Army Medical Corps, and what steps he took to see that the public was not misled by *the incorrect use of such a description*—Mr HORE-BELISHA replied A certain number of personnel were specially enlisted as opticians during the Great War on producing evidence of having passed either of the following examinations (*a*) associate member of the British Optical Association (*b*) fellow of the Worshipful Company of Spectacle Makers I have no power of preventing the incorrect use of the description referred to

Bacteria Content in Undesignated Milk

Mr DAVID ADAMS asked the Minister of Health whether he was aware that undesignated milk supplied by the Milk Marketing Board for human consumption was substantially inferior in the matter of bacteria content to designated milk, and what steps were proposed to deal with this—Mr BERNAYS replied I am aware that a bacterial standard is laid down for designated but not for undesignated milk The upgrading of milk has made very substantial progress in recent years and it is proposed *to continue to assist this in every way possible* The recent improved bonuses for graded milk are, I understand, increasing its supply

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 25, 1930

Notifications—The following cases of infectious disease were notified during the week Smallpox, 0, scarlet fever, 1772, diphtheria, 914, enteric fever, 16 (21 "expected"), pneumonia (primary or *influenzal*), 1089, *puerperal pyrexia*, 189, cerebro spinal fever, 37, acute poliomyelitis, 7, acute *polio-encephalitis*, 2, encephalitis lethargica, 5, dysentery, 44, ophthalmia neonatorum, 76 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on March 31 was 3293 which included Scarlet fever 630 diphtheria 708 (carriers 38) measles 9 whooping-cough 889 puerperal fever 15 mothers (plus 8 babies) encephalitis lethargica 302 poliomyelitis 2 At St Margaret's Hospital there were 26 babies (plus 17 mothers) with ophthalmia neonatorum

Deaths—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 4 (0) from measles, 2 (0) from scarlet fever, 23 (8) from whooping cough, 26 (1) from diphtheria, 62 (13) from diarrhœa and enteritis under two years, and 174 (19) from influenza The figures in parentheses are those for London itself

Birmingham reported 5 deaths from influenza Enfield *Leyton Coventry* and Stoke *on Trent each 4 no other great* town more than 3 The two fatal cases of enteric fever were at Bradford and at Nottingham There were 3 deaths from whooping-cough and 3 deaths from diphtheria at Middlesbrough

The number of stillbirths notified during the week was 257 (corresponding to a rate of 40 per 1000 total births), including 38 in London

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" As a doctor, I am really concerned that our race is becoming town bred and town fed (and I am not biassed by being myself of yeoman stock) Speaking figuratively the countryman is still the 'salt of the earth' I would like to know if it be not better if health and happiness are considered that a man should be put on a farm to eat English butter and English vegetables than that he should live in a synthetic flatlet on synthetic food with Hollywood standards of life and thought We are suffering from a sort of national hæmorrhage which has been going on for years and as the Hebrew lawgiver has it,—'The blood is the life ' We have seen three million acres go out of cultivation since 1921, and we have lost over 100 000 agricultural workers in the same period Cannot we do something to stop this loss of blood before the patient is almost dead ? '—Lord HORDER, reported in the *New English Weekly*, March 9, 1939 (Suppl *on Health and Agriculture*, p 9)

OBITUARY

THOMAS EDWARD KNOWLES STANSFIELD

C.B.E., M.B. EDIN.

LATE LIEUT.-COL. R.A.M.C.

ALTHOUGH it is eighteen years since Colonel Stansfield retired and for more than half that time he had lived abroad, the force of his enthusiasm and work is by no means spent. Not a few of the present-day arrangements for treatment in mental hospitals in this country were introduced by him.

He was born in 1862 in the village of Langfield (now part of Todmorden) on the border between Lancashire and Yorkshire, where the Stansfield family has long been settled After a year at Owens College, Manchester, he went up to Edinburgh and graduated in medicine at the age of 27. Less than a year later he was appointed fourth assistant medical officer and pathologist at Banstead Asylum. He interest in mental-hospital work, especially on its administrative side, was quickly roused It struck him as anomalous that the big institution in which he now found himself should be without a laboratory, and that clinical notes should be entered in case-books kept in offices far distant from the wards and made from material which had been either committed temporarily to memory or jotted down on scraps of paper or in a pocket notebook. Responding to his suggestions the superintendent—the late Dr T. Claye Shaw—set aside a small room and equipped it as a laboratory; he approved, too, of Stansfield's desire for a notebook in every ward—and that was the forerunner of the loose-leaf system of clinical records now generally used.

In 1893 Stansfield was transferred to Claybury Asylum as first assistant medical officer His experience of mental hospitals covered only three years, but he had already begun his practice of visiting other mental hospitals, both at home and abroad, so as to note their facilities and learn their methods In 1894 he visited and reported on eight representative institutions in the eastern part of the United States, and in 1896 he revisited Germany. Foremost among the changes urged in his reports were the adoption of the cottage (or villa) system and the siting of such detached buildings so that recent cases would be kept well separated from others. He also advocated the granting of parole and as much other liberty as practicable to industrious patients, and their housing in villas; the use of spray-baths instead of the ordinary slipper baths, greater employment of patients by adding to the number of utility occupations; and greater liberality in number of the medical staff, with stenographers to help them, laboratories, and good medical libraries within the hospital. He described a system he had seen (at Dalldorf) of "boarding-out" of selected patients, who were brought back for inspection to the hospital monthly by their guardians, when the latter also received their pay.

In 1898 he became the first superintendent at Bexley Mental Hospital, and he remained there 23 years. During that time he further developed the villa system, including the use of parole and the separation of recent from other cases Great use was made of open-air treatment in bed on glass roofed verandahs fully open in front. The nursing of some of the sick-wards was entrusted to women nurses under the matron. Anticipating modern practice Stansfield elaborated a scheme approaching an eight-hour day for the nursing staff. All industrious patients, in wards as well as on parole in villas, were encouraged to sit up an hour or two later than the ordinary bedtime, and evening entertainments and parties were held in the wards To secure more appetising and home-like meals and to enable a supper to be provided, the kitchen in each of the detached buildings was brought into full use and each villa was responsible for its own cooking—an arrangement which is still maintained. Diet-sheets were devised with the special object of permitting considerable choice by both doctor and patient. The general bathrooms were fitted entirely with spray-baths, with a view to economy, saving of time, and ease of inspection. Besides the loose-leaf system of clinical records prescription cards were also introduced. The recreational and amusement side of the hospital's life was developed; the superintendent captained the cricket eleven and led and trained the choir and concert troupe Sir Hubert Bond, who knew him well for many years and to whom we are indebted for these particulars, describes Stansfield as dynamic, full of energy, ready to grapple with any question, and with a genius for administration.

During the war Dr. Stansfield was appointed lieutenant-colonel R.A.M.C. and served as consultant for nervous and mental disorders to the eastern command, for which he received the C.B.E. He retired in 1921, after slightly over 31 years' service under the London County Council. His first wife, who was the daughter of the Hon James Dever of New Brunswick, died in 1926. On retirement he sold his house in Wimbledon and bought Castello Devachan, in San Remo, where he lived until the beginning of the illness which led to his death in Paris on Feb. 19. In 1929 he married Marie, second daughter of the late Alexander Efremoff, of Moscow, by whom he is survived, as well as by his brother and a sister. There were no children by either marriage

WILLIAM LAWRENCE WRIGHT MARSHALL

C.M.G., M.R.C.S.

Dr. Marshall, who died at Cheltenham on March 2 was born in 1859, the son of the Rev Thom Marshall, of London and Exeter. He was educat at University College School and Guy's Hospita and qualified in 1884. He spent almost the whole his professional life at Huddersfield, starting junior house-surgeon at the Huddersfield Roy Infirmary in 1885 After becoming senior house surgeon, he began private practice in the town 1888. For a time he was in partnership with F. D Turner (now medical superintendent of the Roy Eastern Counties Institution for Mental Defectives whose place was taken in 1905 by C D Pye-Smith In 1901 Marshall became honorary surgeon to th Huddersfield Royal Infirmary, and he gradually gave u general practice and devoted himself to surgery only In 1915 he was given command of the Huddersfiel war hospital at Royds Hall with the rank of lieutenant colonel At the end of his two years there the hospital showed one of the lowest death-rates in the country, and for his work Marshall was made C M G Retiring in 1919 he went to live first in Devonshire and later at Cheltenham

Dr Pye Smith writes of him "I could not have begun my professional work under a better man He was a tremendous worker and never spared him self He had a very big private practice composed of all classes, and he was immensely popular and beloved He also had a large consultant practice He was greatly respected at the Royal Infirmary by resident and nursing staffs and by the patients He was a good business man with an orderly mind and keen insight, and he was a power on the board of management of the Royal Infirmary After his retirement he continued to take the keenest interest in all matters concerning his old patients, the life of Huddersfield, and the work of the Royal Infirmary He was a very good surgeon, clean, neat, careful, and rapid, and particularly good in abdominal operations"

In 1896 Dr Marshall married Miss Catherine Elsie James, of Redditch, who, with two daughters, survives him

MEDICAL NEWS

University of Cambridge

Dr O M Solandt has been appointed university lecturer in mammalian physiology Dr E B Verney, F R S, has been appointed a member of the M D committee in place of Dr T S Hele who has resigned

Sir Edward Mellanby, F R S, will deliver the Rede lecture on April 28 at 5 P M in the Regent House He will speak on some social and economic implications of the recent advances in medical science

The following universities and medical schools are now recognised by the faculty board of medicine The board will recognise certificates of study given by hospitals working in coöperation with these universities and schools

University of Oxford University of London, and the medical schools of St Bartholomew's Hospital Charing Cross Hospital St George's Hospital Guy's Hospital King's College (and Hospital), London Hospital, St Mary's Hospital Middlesex Hospital, Royal Free Hospital St Thomas's Hospital University College (and Hospital), West London Hospital Westminster Hospital, Universities of Durham, Birmingham, Liverpool, Manchester, Leeds Sheffield, Bristol, Aberdeen, Edinburgh, Glasgow (with St Mungo's College and the Anderson College of Medicine) and St Andrews the Welsh National School of Medicine and Queen's University Belfast

Special hospitals recognised by the board.—London Queen Charlotte's Maternity Hospital and Maternity Hospital City Road, Newcastle on Tyne The Princess Mary Maternity Hospital, Dublin Rotunda Lying in Hospital and National Maternity Hospital London Royal London Ophthalmic Hospital (Moorfields), Central London Ophthalmic Hospital and Royal Eye Hospital

The board will not issue a list of recognised provincial hospitals and colonial dominion and foreign universities and medical schools, but will consider applications from students who desire that courses which they intend to take in such institutions should be recognised

University of London

At recent examinations the following candidates were successful —

D M R

Part I—S H Ali G W Boden M L Mundy, Mohamed Nasiruddin Peggy C Permain and Nathan Sacks

Sir Henry Dale, F R S, has been appointed a member of the court of the university in place of the late Sir Cooper Perry

University of Aberdeen

At a graduation on March 29 the honorary degree of LL D was conferred on Prof James McIntosh, director of the Bland Sutton institute of pathology at the Middlesex Hospital, London The following diplomas were also conferred —

D P H—John Leiper N A Ross and Marie S Sutherland

Central London Throat, Nose, and Ear Hospital

The postgraduation school of this hospital has revised its syllabus and now provides two five months courses each year, one beginning on June 1 and one on Jan 1 In addition to systematic clinical teaching by a series of lecture-demonstrations the course includes anatomy and physiology with facilities for dissection of the head, neck and thorax, pathology and bacteriology, radiology, endoscopy and speech therapy Further information may be had from the dean of the school, Gray's Inn Road W C 1

Royal College of Physicians of London

At a meeting of the college held on April 3 Dr Robert Hutchison was re-elected president

Diplomas in child health were granted, jointly with the Royal College of Surgeons, to the following —

Akbar Ali, G C Babington S P Bellmaine, N S Clark M S M Colswan Wallace Freeborn Frances M Glyn Hughes, A A Hakeem Margaret M. Haslam N S Hassan, J D Hay, William Heng, Luk Yip Hui, Marjorie F Landau, Sheila M L McWilliam, O N Mills, Mary E Nevin, J L Parnell S M Paw, Hilda Roberts Alfred Rothwell D K Shah K C Shah J E Simpson, J J Theron, and Margaret I Williams

Diplomas in medical radiology and ophthalmic medicine and surgery were granted jointly with the Royal College of Surgeons to those candidates mentioned in our issues of *Feb 18 (p 420) and March 18 (p 671)*

Army Medical Advisory Board

Prof J R Learmonth, professor of surgery in the University of Edinburgh, has been appointed a member of this board in succession to the late Sir David Wilkie

Harveian Society of London

The annual dinner of this society will be held on Thursday, June 8, at the Connaught Rooms, Great Queen Street, W C 2 The hon secretaries may be addressed at 14, Devonshire Street, W 1

Royal Dental Hospital, London

Dr H O Schild has been appointed lecturer on pharmacology and materia medica at the school of dental surgery *of this hospital*

Royal Society of Medicine

On Tuesday, April 25, at 8 30 P M, a reception will be given to the fellows of this society and their friends At 9 15 P M Dr *Philip Gosse will give a lecture on* St *Helena Application* for tickets should be made to the secretary of the society

Ophthalmological Society of the United Kingdom

The annual congress of this society will be held at 1, Wimpole Street, London, W 1, from April 20 to 22 under the presidency of Dr T Harrison Butler He has chosen as the subject of his opening address the anterior capsule Prof H J M Weve (Utrecht) will deliver the Bowman lecture on diathermy in ophthalmic practice, and Mr C B Goulden, Mr A H Levy and Mr R Affleck Greeves will open the main discussion of the meeting which is to be on the problems of refraction The remaining sessions will be devoted to personal communications The hon secretary, Mr Frank Law, may be addressed at 36 Devonshire Place, W 1 In connexion with the congress, as announced in our issue of March 25 (p 737) the International Association for the Prevention of Blindness will hold its general assembly at 3 P M on April 19 The International Organization Against Trachoma will meet on April 21 at 8 30 P.M to discuss the *incidence and clinical type of trachoma met with in* Europe and North and South America The speakers will include Dr F J Lavery (Dublin) Dr Harry Gradle (Chicago), Mr Arnold Sorsby, and Prof Rohrschneider (Königsberg) There will also be a short discussion on the treatment of trachoma by sulphanilamide and its congeners

Central Midwives Board

The board has unanimously re elected Sir Comyns Berkeley as its chairman for the year ending March 31, 1940

Central Association for Mental Welfare

A course for those engaged in the training of mental defectives in occupation centres, institutions, or mental hospitals, and for home teachers has been arranged by this association and will be held in London from July 3 to 22 Further information may be had from the educational secretary of the association, 24, Buckingham Palace Road, S W 1.

Carey Coombs Memorial Fund

This fund has now been taken over by the University of Bristol and the permanent memorial will take the following form :—

1 A prize to be known as the *Carey Coombs memorial essay* prize to be awarded every third year for an essay on cardiology or a similar subject, open to the British Empire

2 A memorial lecture on some medical subject to be given in Bristol every two years

Britain at the New York Fair

A section of the British pavilion at the fair is devoted to an official description of British social services The exhibit, which will be known as the public welfare hall, has been planned by the Ministries of Health, Labour and Agriculture, the Home Office and the Board of Education Emphasis is laid on housing and slum-clearance, national insurance and contributory pensions, the employment and training services of the Ministry of Labour, the health of mother and child, public education, and facilities for leisure and recreation A separate section is devoted to village life

Edinburgh Royal Infirmary

A ward in the new neurosurgical department, which was established largely through the support of the late Sir Alexander Grant and members of his family, was opened by Lady Grant recently. The department, which is under the charge of Mr Norman Dott, will be of great value in enabling all the neurosurgical work to be centralised A special advantage is that the new arrangement avoids the difficulty of duplicating the highly trained theatre staff which is necessary for this work. The department has excellent accommodation for both hospital and private patients, and all the modern devices are provided in the operating-theatre A grant from the Rockefeller Foundation has supplied most of the equipment

Charterhouse Rheumatism Clinic

On March 29 the Duchess of Gloucester opened the new building of the Charterhouse Rheumatism Clinic in Weymouth Street. The clinic was started ten years ago in a room lent by the Charterhouse Mission in Southwark (hence its name), its object being the free treatment of poor patients suffering from rheumatism and arthritis, using a special method of vaccine injections After four years a second clinic was opened in Hallam Street, Portland Place, for paying patients of small means, the fees for investigations and specialist attention being just sufficient to cover expenses, and the medical staff giving their services free In time the number of patients, 500–600 a week, became too great for the accommodation The new building, which has cost £33,000, is planned to deal with 2000 patients a week In addition to four main consulting-rooms it contains laboratories for routine examinations and research, manipulation, X-ray and physiotherapy departments, and a hospital floor where stretcher cases can be admitted for examination The X-ray department contains a special "wide-angle" tube for the treatment of certain types of rheumatism, and has been planned so as to be as little alarming as possible Each department is painted a distinctive colour, so that patients should have no difficulty in orientating themselves In his speech at the opening ceremony Dr Warren Crowe said the clinic had been self-supporting in the past and was expected to remain so; but £23,500 was still required to complete the cost of building and equipment, and it was hoped to acquire an endowment for research Mr. E Hackforth, the controller of the insurance department of the Ministry of Health, read a message from the Minister of Health conveying his approval of the new premises as an institution at which insured persons may obtain treatment as an additional benefit granted by their approved societies

Medical Diary

April 10 *to April* 15

SOCIETIES

PADDINGTON MEDICAL SOCIETY

TUESDAY—9 P M (Great Western Royal Hotel, W 2), Dr Gerald Slot and Dr D C Norris 'Malingering

WEST LONDON MEDICO CHIRURGICAL SOCIETY

FRIDAY—8 30 P M (De Vere Hotel, Kensington, W 8), Prof E C Dodds and Dr L P E Laurent Sex Glands in General Practice

WEST KENT MEDICO-CHIRURGICAL SOCIETY

FRIDAY—8 45 P M (Miller General Hospital, S E 10), Dr C Killick Millard and Dr W A MacIlrath and Dr C O Hawthorne and Mr Stephen Power That Voluntary Euthanasia Should be Legalised

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

THURSDAY—8 30 P M (11, Chandos Street, W.1), Dr Alexander Sandison Escape into Activities

SOCIETY FOR THE STUDY OF INEBRIETY

TUESDAY—4 P M (11, Chandos Street, W 1), annual meeting Dr Desmond Curran *Some Present-day Problems* Regarding Alcohol and Drug addiction

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF GLASGOW

TUESDAY—4 30 P M (Tennent Memorial Building, Church Street), Dr A M Wright Thomson The Eye in the Disorders of Pregnancy

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12

WEDNESDAY—Noon, clinical and pathological conference (medical) 3 P M, clinical and pathological conference (surgical)

THURSDAY—2 15 P M, Dr Duncan White: radiological conference 3 30 P M, Dr P M F Bishop The Menopause and its Disorders

FRIDAY—2 P M, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M, Mr H A T Fairbank Generalised Diseases of Bone

Daily, 10 A M to 4 P M, medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations

Births, Marriages and Deaths

BIRTHS

ROBINSON—On March 28, at Bexley, the wife of Dr G Waring Robinson—a son

UNDERWOOD—On March 31, at Devonshire Place, W 1, the wife of Mr William Underwood, F R C S—a son

WOODS—On April 1, at Tresillian, St Austell, to Bertha the wife of Dr T G Rewcastle Woods—a daughter

MARRIAGES

BURKE—SHARWOOD SMITH—On March 30, at Hermitage Parish Church, Lieut -Colonel Gerald T Burke, I M S (retd) to Kathleen Sharwood Smith

BUTCHER—COWAN—On March 29, at the Church of Saint John the Evangelist, Edinburgh, Nigel Ross Butcher, M B, of Durban, to Nancy Cowan

DEATHS

BUCHANAN—On March 26, Lieut Colonel Andrew Buchanan, I M S, M A, M D R U I, of St Jacques, Guernsey, and of Killyclogher, Omagh

CRAGG—On March 26 at Billingborough, Lincs, Edward Henry Cragg, M D Brux, J P, aged 78 Coroner for the Sleaford District for 30 years

DONALDSON—On April 2, at Muizenberg, Cape, S Africa, Sam Donaldson, M.R C S, late M O, Crown Mines, Johannesburg

GABRIEL—On March 28, at Norwich, William Mabson Gabriel, L R C P E, of Oulton Broad, Suffolk

LISCOMBE—On April 3 in London Robert Henry Liscombe, M B Lond, D P H, D T M & H, medical officer, the Burmah Oil Co Syriam, Burma, aged 50

McGORTY—On March 30 Gerald James McGorty, M C, M B Glasg, Major, R A M C, Peninsula Barracks, Warrington

PATERSON—On March 30, at Manchester Royal Infirmary, Ronald Simpson Paterson, M D Manc D M R E, aged 45

SARGANT—On March 29, at Amersham, William Edward Sargant, M R C S, aged 76

SHELDON—On March 28 T W. Sheldon, M R C S, of Worlington Bury St Edmunds Suffolk.

N B—A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages, and Deaths

Vacancies

For further information refer to the advertisement columns

Bedford County Hosp —Cas O, at rate of £150
Birmingham Canwell Hall Babies' Hosp —Res M O, at rate of £250
Brighton New Sussex Hosp for Women Windlesham Road —Hon med clin asst to outpatients Also H P, at rate of £100
Brighton, Royal Alexandra Hosp for Sick Children —Hon med clin asst.
Brighton County Borough —Male sen M O and asst to M O H £750
Bristol City and County —Asst. M O H, £500
Buckinghamshire County Council —Deputy county M O H and school M O, £750
Cardiff, Welsh National School of Medicine —Demonstrator in dept of pathology and bacteriology £250
Cheltenham General and Eye Hosps —H S for eye ear nose and throat dept, £150
Chertsey, Surrey Botleys Park Colony —Jun asst M O £350
Chester Royal Infirmary. —H S to orthopædic dept £150
Chichester, Royal West Sussex Hosp —Sen and jun H S s £175 and £125 respectively
Coventry and Warwickshire Hosp —Visiting fracture and orthopædic surgeon, £600
Dreadnought Hosp Greenwich S E 10 —H P at rate of £110
Durham County and Sunderland Eye Infirmary —H S, £150
Essex County Council —Temp tuber officer, £12 a week
Exeter, Wonford House Registered Hosp —Asst M O, £350
Gilbert and Ellice Islands Colony Central Pacific —Asst M O for Ocean Island £550
Glasgow Eye Infirmary —Res H S £150
Halifax Royal Infirmary —Cas O at rate of £150
Hosp for Sick Children Great Ormond Street W C 1 —Outpatient med reg, £150
Hove General Hosp —Jun res M O at rate of £120
Ilford, King George Hosp —H S at rate of £100
Lambeth Metropolitan Borough S W 2 —Deputy M O H £840
Lancaster, Royal Albert Institution for the Feeble minded —Res jun asst M O, £375
Lanchester Joint Hosp Board —Med supt. for infectious hosps £750
Leicester City Isolation Hosp and Sanatorium Groby Road —Res M O at rate of £300
Lincoln City. —Asst M O H and asst school M O £500
London County Council —Asst. M O (Class I), £350 Asst M O's (class II) each £250 Also asst district M O s £175–£150 *
London Hosp E 1 —Surgical and medical outpatient first assts, each £150 Hon asst anæsthetist Also hon asst physician to dept of physical medicine
London University —University chair of obstetrics and gynæcology, £2000
Macclesfield Cheshire County Mental Hosp Parkside —Asst M O, £350
Maidstone Kent County Mental Hosp —First asst M O £475
Manchester, Booth Hall Hosp for Children —Res surg O £100
Manchester, Park Hosp, Davyhulme —Asst res M O and jun asst res M O at rate of £300 and £250 respectively
Manchester City —Consultant dermatologists for Crumpsall Hosp and Booth Hall Hosp each £125
Manchester Ear Hosp Grosvenor Square, All Saints —H S, at rate of £150
Manchester Royal Infirmary —Res jun M O for Barnes Convalescent Hosp, at rate of £150 Second res clin pathologist £150 Also hon asst aural surgeon
Middlesex County Council —Asst M O £350 Also two jun res asst M O 's each £250
Newark General Hosp —Res H S at rate of £175
North Western Child Guidance Clinic Sheldon Road, N W 2 —Psychiatrist £100
Norwich, Norfolk and Norwich Hosp —Cas O £120
Nottingham General Hosp —H P and H S to orthopædic and fracture dept, each at rate of £150
Nottingham and Midland Eye Infirmary —Res H S £200
Oxford Radcliffe Infirmary —Asst radiologist £450
Paddington Green Children s Hosp W 2 —Hon radiologist
Plymouth City Isolation Hosp —Asst res M O £300
Rochdale Infirmary and Dispensary —Second H S, £150
Rotherham Hosp —H P, £150
Royal Cancer Hosp Fulham Road S W 3 —Sen asst radiologist for therapeutic section of radiological dept, £150 Also radiologist £400
Royal Naval Medical Service —M O 's
St Leonards-on Sea Fernfield Chest Hosp —Asst res M O, £150
St Mary s Hosp W 2 —Cas H S at rate of £100
Salford, Infectious Diseases Hosp —Jun asst res M O, £200
Sheffield Children s Hosp —H S at rate of £100
Southend-on-Sea General Hosp —Res anæsthetist at rate of £125
Stoke-on Trent London Road Hosp —Two res asst M O s each £250
Stoke-on Trent North Staffordshire Royal Infirmary —H S to orthopædic dept at rate of £150
Surrey County Council —Asst M O £600
Walsall Manor Hosp —Jun asst M O, £150
Warrington Infirmary and Dispensary, &c —Visiting pathologist and bacteriologist £500
West London Hosp, Hammersmith, W 6 —Chief clin asst in X ray (diagnostic) dept £125
Westminster Hosp Broad Sanctuary, S W 1 —Hon appointments
Winchester Royal Hampshire Hosp —H P at rate of £100
Wolverhampton New Cross Hosp —Asst M O £200
Wolverhampton Royal Hosp —H S to fracture and orthopædic dept at rate of £100
Woolwich and District War Memorial Hosp, Shooters Hill S E 18 —H P at rate of £100

Medical Referee under the Workmen's Compensation Act 1925 for the Paisley Sheriff Court District (Sheriffdom of Renfrew and Bute) Applications should be addressed to the Private Secretary Scottish Office, Whitehall, London, S W 1 before April 28

Appointments

ANDERSON J C M B St And F R C S hon consulting surgeon to the Rampton State Institution Retford
BAILLIE, M HAYDON F R C S resident surgical officer at St John s Hospital, Lewisham
BUCK G H B M Oxfd, senior resident officer at the Royal London Ophthalmic Hospital
COHEN F LIPMAN M B Camb, physician to the Western Skin Hospital London
FORRESTER WOOD W R, M B Camb, F R C S hon surgeon to the King Edward VII Memorial Eliot Hospital Haywards Heath
HARVEY M S M B Edin D P H, assistant medical officer of health for Plymouth
KANDER H S, F R C S registrar to the Golden Square Throat Nose and Ear Hospital London
MAXWELL F C W, M R C S medical officer and public vaccinator of the Battle Public Assistance Institution
PATTERSON ELEANOR M B B Hy Durh D P H, assistant medical officer of health for Exeter
SWARTZ S L M D Manc, F R C S E assistant resident medical officer at the public assistance committee s hospital Newport Mon
TOWNSEND G W H M B Dubl D P H county medical officer for Buckinghamshire
*VERNON, ERIC, M D Manc F R C S resident surgical officer at the Crumpsall Hospital Manchester

London County Council —The following appointments promotions and transfers are announced A M O (I) or (II) = assistant medical officer Class I or II (T) = temporary

SAVAGE, O A, M R C P part time rheumatism registrar (T) St Stephen s
WYLLIE DAVID M D Edin A M O (I) St Giles
RANK, B K M S Melb F R C S A M O (I) St James
SANDFORD IRENE M B Lond A M O (I), Hackney
JOHNS T A B M Oxfd A M O (II) Queen Mary s Carshalton
HENRY G H, M B Sydney A M O (II) St Leonard s
EDWARDS, A M, M B Lond A M O (II) St Stephen s
OAKS A M M D Lond D C H A M O (I) Queen Mary's Carshalton and
KENNEDY, J P M B N Z, A M O (II) Eastern

London Hospital —The following appointments are announced —

TAYLOR HERMON M D Camb M Chir F R C S, assistant surgeon,
HICKEY B B B M Oxfd F R C S, surgical first assistant and registrar and
PRICE R I A M B Lond, first assistant to the skin and light therapy department

Royal London Ophthalmic Hospital —The following appointments are announced —

CROSS A G M B Camb F R C S
GREEVES P R B M Oxfd D O M S,
HENRY R F M B Sydney D O M S
MACANDREWS J J M B Dubl and
WILLIAMS R C M R C S first assistant medical officers
BERGEL, HENRY, M R C S, D O M S
BURNS I M B
CARTER ROSE A M B
CASS EMILY I, M B,
FLEMING JEAN M, M B
GREAVES P R D O M S
HART J L M B
HENDERSON J R M B
JONES J M B D O M S,
LANCKENAU, NELLIE I M D
LIEBSCHUTZ H, D O M S
MIDDLECOTT, B R, D O M S
MILNE A D M R C S
O BRIEN F D F M B
SCHLOSS, ANNELIES M D
SINCLAIR, S R M B,
WILSON F C M R C S
YOUNG J HOLTON M B, and
ZEITLIN F F, M D out-patient officers

Medical Referee under the Workmen s Compensation Act 1925 Dr A H BAKER of Scarborough for the New Malton Scarborough and Whitby County Court Districts (Circuit No 16)

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* Subject to confirmation

NOTES, COMMENTS, AND ABSTRACTS

PRINCIPLES OF MEDICAL RESEARCH *

CAUSE AND CURE

By Lorenz S. Michaëlis, M D. Berlin, L.R.C.P.E.
CLINICAL ASSISTANT IN THE ORTHOPÆDIC DEPARTMENT, ST. JOHN'S CLINIC, LONDON

In any discussion of the prevention and cure of cancer, whether between medical men or others, sooner or later someone will express resignation with a sigh If only we knew its cause, he will say, this terrible disease could surely be abolished. And with this statement, with which everybody seems to agree, the discussion passes on to another subject.

But is it true? If it were, it would imply the truth of three premises. First, there must be one single cause for cancer, which has not yet been discovered. Secondly, diseases whose causes are known can be cured. Thirdly, diseases whose causes are unknown cannot be cured. And above all it would have to be taken for granted that cancer is a disease sui generis like tuberculosis or typhoid fever

It might prove useful to try to decide whether all these implications are justified. If they are not, the conclusion that the success of our fight against cancer depends on the discovery of its cause is misleading, and this might have an important bearing on the value of a great deal of the research in this field.

While no single cause is known which could be responsible for all cancers, a variety of causes have been discovered which account for a great many cases of cancer. Both in man and animals many chemical substances have been shown to produce cancer. Rays, especially X rays, do the same. Certain congenital malformations form the basis for cancer just as do certain processes of repair such as scars For some cancers endocrine disturbances have been shown to be the predominant causal factor, for others extensive structural changes of unknown ætiology—e g., osteosarcomas in Paget's disease. But, say some workers in cancer research, these so-called causes of cancer are only secondary ones, behind which hides the one primary factor. Many hypotheses have been advanced as to the nature of this factor. Constitution, heredity, lack of immunity or resistance (either congenital or acquired), racial, climatological and dietetic factors have all been suggested, and various infective agents are the subject of extensive research in this country. If it were true that the real difficulty in the search for the cause of cancer was the complicated mechanism of its ætiology, the enormous efforts being made to find this primary cause would be justified, but only then. [The dual causation of disease is nothing new in pathology. Without certain constitutional, hereditary, or other predisposing factors even tuberculosis will not arise, in spite of the bacillus being present]

Our second thesis, that we are able to cure diseases whose causes we know, sounds very convincing. Malaria and syphilis, diabetes and diphtheria are examples in its favour. But what of whooping-cough or even tuberculosis itself? In one the cause is almost and in the other quite certain, but can we claim that this has led us to an unfailing cure? It is true that any day the discovery of an agent specific and powerful like the new sulphonamides against streptococcal infections may be announced, but certainly the results of the attempts of Koch and many after him to apply their knowledge of the cause of tuberculosis to the production of a cure did not come up to even the most modest expectations. No-one would deny that there is some connexion between the discovery of cause and the discovery of the cure of a disease, but it must still be regarded as a very loose one.

Lastly, is it true that we cannot cure diseases where cause is unknown? Two of the outstanding advances in therapeutics of recent years are the insulin treatment of diabetes and the treatment of pernicious anæmia with liver- and stomach-extracts But while in diabetes the development of treatment arose directly from the systematic discovery of the cause, this sequence of events did not apply to pernicious anæmia. Here success, not less complete than in diabetes, followed a curious mixture of accidental and empirical feeding experiments with raw liver, for which less disagreeable and more concentrated substitutes were found later. This life-saving therapy came indeed as a surprise to those who had tried for many years to discover the cause of the disease. Even now, ten years later, in spite of the knowledge where to look for it, the cause proper cannot be said to be known. It will be found, perhaps very soon, but the fact remains that a most severe disease, known for a long time as a clinical entity, can now be cured without its cause being known

THE TRUE BASIS OF RESEARCH

I believe that we must replace our three premises by three statements to the contrary. First, many causes of cancer have been discovered. Even if we admit the possibility of one or more underlying primary factors, this would not mean that less is known about the causation of cancer than of other diseases Secondly, there are important diseases where cause has been known for a long time but for which we have no causal cure. Thirdly, the cause of at least one important disease we can cure is still unknown. It follows that there is no direct connexion between knowledge of the cause of a disease and of its cure, and therefore if the primary cause of cancer—of doubtful existence—were discovered, we should not necessarily be able to prevent or cure cancer more successfully than we do now. On the other hand, a more effective cure for cancer might well be discovered before we know more about its ætiology. It might even be that—as happened in the case of pernicious anæmia—only the discovery of the cure would lead us nearer to the cause.

But is cancer a disease sui generis rather than a group of many diseases, each with its own symptoms and signs and some with a known cause? Obviously there are two ways of looking at this problem. Those who think that malignant growth is a disease sui generis look on it as a phenomenon comparable to tuberculosis, a complex of changes which may occur in almost any tissue in consequence of a common causative agent It is these workers who, led by this analogy, set out to discover a common cause to all cancers The other way of considering the problem is to group malignant growth with the other basic responses of cells and tissues like degeneration or regeneration, and to think of it as one of the few possible reactions to numerous ætiological factors and their combinations It would then seem as futile to search for a single cause of malignant growth as for a single cause of degeneration. We would have to agree that there are many causes in every case of cancer depending on the organ in which the growth starts and on a number of variable factors in every *individual*

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* A previous article entitled The Limitations of Histology appeared in our issue of Jan 21, p. 186.

If this second attitude were *generally adopted* it would lead to a change of policy in cancer research The search for a common cause would give place to the intensified study of clinical material and present and possible future lines of cure Clinical observation and early diagnosis, surgery and radiology do much already They may be expected to attain more by further development of their resources And the discovery of new lines of therapeutic attack is by no means impossible

APPLICATION TO OTHER PROBLEMS

Is the cancer problem the only one to which these considerations apply ? Might it not be useful for instance to apply them to the problem of the cause of rheumatism ? Here too a great deal of work and thought is being expended on the search for a cause Should not the question be asked whether it is probable that there exists a single cause for the wide variety of diseases gathered under the name of rheumatism ? Is it not more likely that here again certain tissues (muscle, tendons, fasciæ, synovial tissues, cartilage, bones) respond in their specific fashion to many different causes and their combinations ? If we were agreed that climate, damp, food, infection, endocrine and constitutional factors are combined causes in every case, their relative preponderance varying from individual to individual and from organ to *organ, would that not be more consistent* with the variety of this complex group of diseases than one single cause ? Would not the study of these individual causes in every clinical case prove more useful than the pursuit of the traditional ideal, the primary factor ?

Remembering our conclusions as to the connexion between cause and cure, is it likely that even if such a factor were discovered it would lead to progress in the therapeutic field ? It seems more certain that painstaking research into the history, signs *and symptoms* of as many patients as possible should form the front line of attack Immediately behind should follow the study of our manifold therapeutic efforts and their combinations, about which much less is known than the existence of "routine treatments" might suggest It should be our endeavour *to find out the* right combination of treatment for each individual patient—not just for fibrositis or *arthritis—and* we should *search for the* individual combination of causes in every case

* * *

From the stormy seas of speculation as to the cause of disease bacteriology, the pilot, has brought a whole fleet safely into the harbour where many ships now are moored each to a single pier But there are giant ships outside, too big ever to enter the port They will have to be docked with the help of many tugs In time we shall be able to take stock of what they contain

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GRAINS AND SCRUPLES

STUDENT writes The Part time Professor responsible for last month's Grains and Scruples may be interested in another example of unconscious(?) humour in a university handbook The syllabus for the Liverpool school of medicine contains the following passage "New animal houses have now been built on the roof, thus affording additional accommodation for students"

DETECTION OF TOXIC GASES IN INDUSTRY

THE Department of Scientific and Industrial Research has issued two more pamphlets giving methods for detection of gases Leaflet No 3 deals with sulphur dioxide, which, it is stated, should not exceed a concentration of 1 in 100,000 for several hours' exposure or 1 in 2000 for short exposures It is generally considered that the nose will detect the smell of burning sulphur when the concentration of SO_2 is about 1 in 1,000,000, which may be reached for short periods during a bad London fog, and people who have never lived in a town are still more sensitive The test recommended is of the same type as those already published for sulphuretted hydrogen and hydrogen cyanide—i e, drawing the suspected air through a treated filter-paper with a syringe and comparing the stain produced with a sheet of reproductions of stains produced by known concentrations The reaction used is the reduction of potassium iodate to iodine, which gives the well-known stain with starch The *paper* is kept moist by adding a little glycerin to the reagent, and the unfavourable effect of this addition on sensitivity is counteracted by adding potassium iodide as well as iodate

Leaflet No 4 gives a test for benzene on rather different lines, the air to be tested being drawn through the reagent in a bubbler, the standard exhaust pump used for the other tests being employed for this purpose The reagent is concentrated sulphuric acid containing 5 per cent of formalin, which yields an orange-brown colour with even traces of benzene or its homologues, most of which are toxic A standard (1 per cent) solution of sodium nitroprusside is used for comparison The standard *colour is produced in the test liquid after less than one* stroke of the piston of the syringe by a concentration of benzene vapour of 1 in 700, and 18 strokes are needed to produce it when not more than 1 in 10,000 is present Between these limits a table shows the concentration to be inversely proportional to the number of strokes required

OLD MEDICAL BOOKS AND MSS

AN interesting medieval manuscript of south German origin, written about 1410, is being shown by Orion Booksellers Ltd, 9, Bloomsbury Street, London, W C 1 It is one of a group of manuscripts containing allegorical drawings, but its chief medical attraction is that it has four folios depicting the anatomical points used for venesection One of the best of the group is a Munich MS from the Benedictine Abbey of Metten, Bavaria, and two of its drawings are similar to a couple in the present MS. The British Museum MS Arundel 83 has similar drawings, and a much finer MS, also with anatomical drawings showing the veins, was sold at Sotheby's in 1931 for £2200 and passed into the possession of the late Sir Henry Wellcome

Even minor medical MSS fetch a good price in the sale room At the sale of letters and papers from Hartwell House, Bucks, at Sotheby's on March 6–8 this year the manuscript report of John Hunter on his diagnosis and prescription in the case of Sir William Lee's cook fetched £16, and three letters from Stephen Hales, the naturalist, written to Sir George Lee while a Lord of the Admiralty (to which post he was appointed in 1742), detailing an invention intended to facilitate the respiration of seamen in the well of a ship—a precursor of the modern gas mask—were sold for £13

At least three important MSS are listed in catalogues received from E P Goldschmidt and Co Ltd (45, Old Bond Street, W 1) There is a complete MS, well written in an Italian hand about 1300, of Bruno de Longoburgo's "Chirurgia Magna," one of the most famous of medieval surgical textbooks Dino di Garbo is represented by a fourteenth century MS in an Italian hand, of his "De Emplastris et Unguentis" The third MS is a pen-drawing

Jan Stephanus van Kalkar of the figure of a flayed man, showing all the superficial muscles. Each muscle is labelled to refer to the text presumably of Vesalius's work on anatomy, and this drawing was probably rejected by Vesalius in favour of the one that appears in his book The artist was a pupil of Titian and died at Venice in 1546. The same catalogues list a sixteenth-century German surgical saw, a sixteenth-century Arabian surgical knife, marked "Albazeti," of a traditional pattern that goes back several centuries earlier to Albucasis, and a set of four eighteenth-century brass cupping-vessels of various sizes and shapes In this connexion it is interesting to note that on March 29 this year at Christie's, a Queen Anne plain silver cupping-bowl by Nathaniel Locke, 1713, was sold for £36 10s. (£10 per oz).

We have also received from David Low (17, Cecil Court, London, W.C 2), a catalogue of 250 old books on the history and practice of medicine, from the library of the late Prof William Stirling and other sources. They include two editions of Johann Heinrich Cohausen's "Hermippus Redivivus, or the Sage's Triumph over Old Age and the Grave," described by Dr. Johnson as "furnishing a curious history of the extravagancies of the human mind" Cohausen thought that the secret of longevity was inspiration of the breath of young boys He also published at Amsterdam in 1716 an amusing satire in Latin on snuff-taking, entitled "Dissertatio Satyrica Physico-medico-moralis de Pica Nasi, sive Tabaci Sternutatorii."

A WARNING

WE are informed by the London and Counties Medical Protection Society that a young woman is calling on west-country doctors soliciting a subscription to an American medical journal She explains that if she procures 700 subscribers the firm issuing the journal will pay her expenses at a university in this country. One of the doctors approached, after promising to subscribe, has stopped his cheque on suspicion that the story may have been concocted merely as a method of canvassing.

RESEARCHES ON FOOD

AMONG the studies described in the annual report for 1937–38 of the Department of Scientific and Industrial Research (Cmd 5927, H M Stationery Office) are those undertaken by the Food Investigation Board, which have covered a wide range. An investigation of the progress of acidification of muscle post mortem has shown that hardening, which is the essential feature of rigor mortis, involves a decrease of elasticity and an increase of viscosity of the muscle, both effects being apparently due to the shrinking of myosin, the protein of the fibril, by the acid produced. The changes in composition of the fat of the pig during growth have been studied as well as other matters which may ultimately be of practical use in the pig industry The discovery that parts of the alimentary tract of certain fish, particularly halibut, contain large quantities of vitamin A is of interest. The storage of 26 tons of apples from early in October to Feb 22 in an atmosphere kept at 2·5 per cent. oxygen and 5 per cent. carbon dioxide in the gas store at Ditton was completely successful, and pears grown in this country were kept in a somewhat similar atmosphere for five or six months. Study of the dry and wet methods of curing bacon and hams has shown that the pink colour of the flesh of these products is produced by the action of nitrites formed by bacterial action from nitrate of potash used with salt in the brine and also that most organisms fail to grow in brines of over 20 per cent. strength at blood heat. The problem of killing spores of bacteria when canning solid foods has led to an investigation of the rate of penetration of heat through meat and other dry packs. That properly canned foods can be kept sound for many years was shown by the good condition of roast veal in a can, recently opened, which was taken by Parry in his voyages to the Arctic in 1824–25.

DIPHTHERIA INOCULATION OF PROBATIONER NURSES

BETWEEN the end of May, 1930, and the beginning of July, 1937, 1070 probationers at the Blegdams Fever Hospital in Denmark were inoculated against diphtheria with Ramon's anatoxin. Dr. Plum[1] says that at first the anatoxin was given either by subcutaneous injection or by nasal instillation; later both routes were used, injection being followed by instillation The reactions to subcutaneous injection were studied in 300 cases; a local reaction appeared in 92 per cent within the first 24–48 hours. In a few cases it was pronounced, and the inflamed area was not only tender but actually painful The reaction rarely lasted more than a week, and seldom interfered with the probationer's work In one case only did a sterile abscess develop. No relationship could be established between the severity of the local reaction and the increase in the amount of antitoxin in the blood A general reaction, lasting mostly 1–4 days, was observed in about a third of the probationers, who had general malaise, lassitude, headache, giddiness and vomiting A few had to stop working and go to bed for a couple of weeks A comparison of the diphtheria morbidity-rates before and after the introduction of this measure supported its value. In the 6 years ended in 1929, 9310 cases of diphtheria were treated; 81 probationers contracted it and 1 of them died. The number of days of sickness was 2698. In the 6 years ended in 1936, when 6890 cases were treated, there were 18 cases and no deaths among probationers whose inoculations had been completed, and the number of days of sickness was only 566 Dr Plum holds that in spite of the discomfort sometimes associated with this prophylactic treatment it is well worth giving

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[1] Plum, P, *Ugeskr Laeg* 1939, p 67

THE LANCET 100 YEARS AGO

April 6, 1839, p 78

From an article on the doctrine of a vital principle, by Dr. J JOHNSTON KELSO *of Lisburn*

THE observation of the illustrious author of "The Man of Feeling," is no less true than beautiful,—"*That in knowledge and philosophy* the chief purpose of research should ever be fixed on making simple what is abstruse, not abstruse what is simple" Fortunate, indeed, it had been for the interests of physiological science, if those writers who have advocated the doctrine of a vital principle had been guided by the comprehensive spirit of this sage precept of Henry Mackenzie, .

The idea of a peculiar, incomprehensible *power* pervading the entire organisation, as essentially consisting of fluids and solids, influencing alike the minutest molecules and the several tissues of which the various organs are composed, and originating and maintaining all the special phenomena and actions of living organised beings, dates its origin at the early, but rather inauspicious, dawn of the science of physiology The "*vis Plastica*" of the ancients, the '*Spiritus Archæus*" of Paracelsus and Van Helmont, the "*Anima*" of Stahl, the "*Bildungstrieb*" of Blumenbach, the "*Matter of Life*" of Mr Hunter; the "*Vital Principle,*" "*Spirit of Animation,*" &c. of other writers, are modes of expression all of which obviously point to the same hypothetical principle . Of the existence, however, of this purely imaginary principle, as a distinct entity, we have not the slightest shadow of proof, either in fact or in collateral probability; . . .

ADDRESSES AND ORIGINAL ARTICLES

INFANTILE DIARRHŒA*

By J. M. Smellie, M.D. Edin., F.R.C.P.
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From earliest times infantile gastro-enteritis is known to have been a rampant disease with a high mortality. Garrison (1929) records that in England, in the hot summers of 1669–71, 2000 babies died of diarrhœa in eight or ten weeks. Indeed, until recent times most of the deaths in the early years of life were caused by the diarrhœal diseases. It is surprising, therefore, to find that the early writers in pædiatrics did not describe it more frequently and in greater detail than appears to be the case. Ruhräh (1925) has commented on this fact and stated that Benjamin Rush in 1789 was the first writer to give anything like a systematic account of cholera infantum. Rush noted the regularity of its appearance in the summer months and was the first to connect the disease with the hot weather. He gave a very accurate clinical description and refuted the suggestion, apparently current then and heard occasionally even today, that it was due to dentition. He aptly pointed out that it appeared only in one season of the year. Rush's view was that it was a modification of adult cholera and remitting fever, although making its appearance earlier in the season than the adult cases. Apparently the disease was unknown in Europe at that time, and several years later it appeared in certain parts of central Europe and was called "Rush's disease" (Arnold 1927).

Infantile diarrhœa has once previously formed the subject of the Ingleby lectures. This was in 1893, the lecturer being A. H. Carter, who was at that time professor of therapeutics to Mason College and senior physician to Queen's Hospital. His were clinical lectures, emphasis being placed on prophylaxis, particularly the encouragement of breast-feeding. He was fully aware that unsuitable or impure milk was a common starting point of trouble. Carter classified the diarrhœas into two main groups, the non-inflammatory and the inflammatory, the former variety being due to food errors and sometimes teething. The inflammatory diarrhœas he recognised to be due to bacterial infection, sometimes found in the food but usually unknown. The severe course, the high mortality, and the inadequacy of satisfactory methods of treatment received *due consideration*. It is interesting to note that about that time parenteral therapy was apparently just beginning to come into use, for Carter mentioned that subcutaneous saline might be beneficial, but he personally had not had any experience of its employment.

There must have been a very severe epidemic of infantile diarrhœa in Birmingham in 1893, for the medical officer of health for the city (Dr. Alfred Hill) recorded (1894) that the deaths in that year exceeded those in any previous year except 1875. The deaths were in the proportion of 1 [illegible] per 1000 persons living, and the rate varied widely in different localities. The central, most densely populated, old slum subdistricts suffered most severely, in contr [illegible] the better class residential districts, where the [illegible] ality was low. Parsons (1921) also has drawn a [illegible] n to the fact that in the years 1912–16 the tot [illegible] t mortality rate in this city was two and a half times greater in the central than in the outlying districts. In his report Hill pointed out that a high summer temperature was the exciting cause of the epidemic prevalence of diarrhœa but was not in itself the essential cause of the disease. He contended that the unequal incidence of the disease in the various districts of the city, which was noticeable throughout the country as it was in Birmingham, would of itself be sufficient to prove this, and he concluded that heat, although no doubt the chief exciting cause, was not the primary cause of summer diarrhœa.

During the last forty-four years there has been a notable reduction in the death-rate from infantile diarrhœa. In 1893 the rate for the whole of England and Wales was 0·7 per 1000 of the population, and in 1937 this rate had dropped to 0·08; the corresponding figures for the city of Birmingham are 1·2 in 1893 and 0·08 in 1937. It will be noticed that, whereas in 1893 the Birmingham rate was nearly double that of the whole of England and Wales, in 1937 this had dropped to the average for the whole of the country. Even today, however, acute gastro-enteritis is still a menace to infant welfare, particularly during the first twelve months of life. It shows its greatest incidence among the poor and the malnourished, and its mortality remains high. Improved sanitary conditions, a better and cleaner milk-supply, and the adequate cleansing of feeding utensils have contributed to a considerable decrease in the incidence of the diarrhœal diseases. Nevertheless these still take a considerable toll of infant life.

The ætiology of the disease is complex and diverse, but its clinical manifestations are typical and characteristic. Moreover, owing to its well-known and frequently observed infectivity, the problem of the nursing and management of these patients in hospital causes considerable anxiety. In spite of all possible precautions this disease is liable from time to time to sweep through a ward, often with tragic results.

For the last few years a small ward in the Birmingham Children's Hospital has been set aside exclusively for the reception and treatment of infants suffering from gastro-enteritis. Thus, all such children have been segregated from the other patients in the hospital, and a more intensive study of the problem has been rendered possible. The nursing has been carried out on "barrier" principles, every nurse being both masked and gowned, every infant being regarded as suffering from an acutely infectious and contagious disease. The ratio of nurses to patients in the ward is 1 to 7. These lectures are based on a study and analysis of the first 500 infants who have been treated in this ward.

FEEDING HISTORY AND NUTRITION

The important part that breast-feeding plays in the prevention of all gastro-intestinal upsets and diseases has been recognised by practising pædiatricians for many years. Ever since the artificial feeding of infants became prevalent, all writers have recognised the increased incidence of the diarrhœal diseases among such babies. As has already been mentioned, Carter (1893), forty-six years ago, laid emphasis on the prophylactic value of breast-feeding, and recently Spence (1938) has declared that it is beyond all question that breast-fed infants show a greater freedom from disease and a greater power of recovery from disease than artificially fed infants. My figures very strongly support and confirm

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* Ingleby lectures delivered at the Univ[illegible] Birmingham on March 28 and April 4, 1939.

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the accuracy of these statements. Only 12 infants had been entirely breast-fed up to the time of admission with gastro-enteritis; two died, one from bronchopneumonia, the other from bilateral mastoiditis. Furthermore, out of 375 infants under the age of nine months only 154, or 41 per cent., had been breast-fed for a month or more. The mortality-rate in this group was 25·9 per cent., which contrasts with a mortality-rate of 76·6 per cent. in those who had never been breast-fed. Thus, although there was not a great deal of difference in the incidence of gastro-enteritis in partially breast-fed and in entirely artificially fed infants, the mortality-rate in the latter group was more than three times greater than in the former.

The influence of the state of nutrition on the prognosis was not as great as might perhaps have been anticipated. It is now generally agreed that an infant 14 per cent. or more under its expected weight for age should be considered to be suffering from marasmus, malnutrition, or infantile atrophy (Maitland-Jones 1933). All infants suffering from gastro-enteritis are also suffering to a greater or lesser extent from dehydration. I have therefore allowed an additional 6 per cent. for this factor and only regarded as marasmic those infants whose weight on admission was 20 per cent. or more under the expected weight for age. Using this criterion I find that of my 500 cases 188 (37·4 per cent.) may be classified as marasmic; 89 of these recovered and 99 died.

DURATION OF SYMPTOMS

The duration of symptoms before admission to hospital varied widely, but the patients can be grouped conveniently into two main divisions: those whose symptoms had been present for only a few days (the acute cases) and those who had had symptoms for more than a week (the subacute or chronic cases). Thus, 377 (75·4 per cent.) were acute and the remaining 123 were subacute or chronic.

Of the acute cases 82 were transferred from other wards of the hospital, having developed their gastro-intestinal symptoms after admission for other diseases; 48 of these infants died. Some on admission were suffering from an acute infection, such as bronchitis, pneumonia, otitis media, or cellulitis, and the gastro-enteritis was a complication of this initial infection; but, on the other hand, there were some who had been admitted to the surgical wards for a simple operation, and an analysis of these reveals a number of tragedies which unfortunately are common to all children's hospitals and continue to recur from time to time in spite of all possible precautions. Seven infants developed diarrhœa after radium treatment for hæmangiomata, nævi, or moles, and it appears that the gastro-intestinal upset may have been a direct consequence of such treatment—at any rate that is the impression I have received.

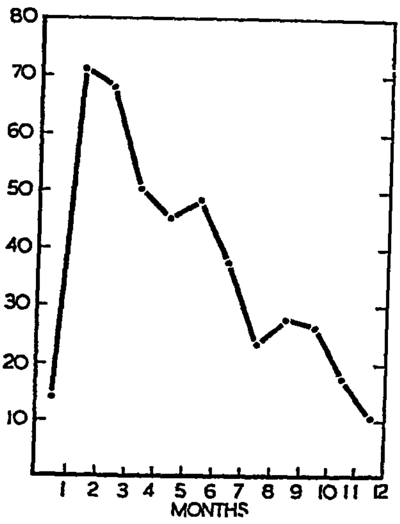

FIG. 1—Age-incidence of infantile diarrhœa in 436 infants under 1 year.

Incidence and Mortality

Infantile diarrhœa is essentially a disease of the early months of life (fig. 1). Of the cases that I have studied 375 (75 per cent.) were under the age of nine months, and only 64 (12·8 per cent.) were more than one year of age. The highest incidence was in those between the ages of one and two months, and from the third month of life onwards there was a steady and progressive fall. Surprisingly few were seen in the neonatal period.

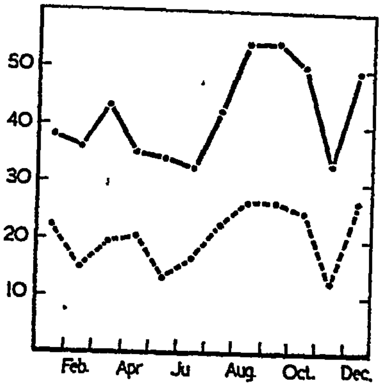

FIG. 2—Seasonal incidence of infantile diarrhœa in 500 infants. Dotted line represents fatal cases.

MORTALITY

Of these 500 infants 240 died, giving a mortality-rate of 48 per cent., but included in this figure were some who were moribund on admission and died within a few hours. The mortality-rate in the Glasgow series recently published (Cooper 1937) was 47·2 per cent., but other observers have recorded a much lower rate. In America a considerably lower mortality has been recorded, but it is difficult to assess the severity and toxicity of their cases—they probably included many mild ones.

As has already been mentioned, of those infants under nine months who had never been breast-fed 76·6 per cent. died, and moreover 41·3 per cent. of those who died were marasmic at the time of admission. There was but little difference in the mortality-rate between the acute and the subacute or chronic groups; in the former the rate was 49 per cent. and in the latter 44·7 per cent. Another significant point, particularly with reference to the ætiology of infantile diarrhœa, is that the mortality-rate was practically the same in the winter months and in the summer months.

SEASONAL INCIDENCE

Until recently infantile diarrhœa has been predominantly a disease of the summer months (fig. 2), and in the past innumerable theories have been advanced to explain the reason. I believe that the notable improvements in the public-health services, the better and cleaner milk-supply, the introduction of dried milks, and the all but complete abolition of horse transport from the industrial areas are the factors that have caused an almost complete disappearance of the "summer diarrhœa" of the last decade. In my experience this type of the disease with its characteristic seasonal incidence, explosive outburst, and great infectivity is nowadays a rarity. It is true that my figures show a slightly increased incidence from July to October, but this is not material.

Today the problem of infantile diarrhœa is different from what it has been in the past. Then the severity, the acuteness, and the appalling mortality of the well-known and dreaded "cholera infantum" absorbed attention to such an extent that the

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occurrence and incidence of other forms and varieties of diarrhœa (except perhaps the dietetic) were almost completely overlooked. The "summer diarrhœa" of textbooks has to all intents and purposes been completely eradicated, and we are now called on to deal with a disease that is of mixed ætiology and moreover is present with us the whole year through, summer and winter alike. In consequence, the views expressed in the past as to the ætiology of the infantile diarrhœas must be revised.

Classification and Causation

The classifications of the infantile diarrhœas have passed through various phases and reflect to some degree the advances in medical knowledge. In the first instance the cases were divided into groups based entirely on the symptomatology, as shown, for example, in Carter's use of such terms as simple, recurrent, or persistent diarrhœa and cholera infantum. Presently this was appreciated to be very inadequate, and then followed attempts at classification on the basis of the supposed anatomical sites of the lesion. This led to the introduction of gastro-enteritis, enterocolitis, ileocolitis, and so on, but it came to be recognised that there was no correspondence between morbid anatomy and the different varieties of diarrhœa. The rise in the knowledge of bacteriology seems to have been the reason for the next attempts at classification, and all infantile diarrhœas were considered to be due to infection by micro-organisms. The different varieties of dysentery infection were recognised, Morgan's bacillus was isolated, and various types of streptococci, *Bacillus coli*, and *Bacillus enteritidis* were identified. Soon the subject became, and in fact remains, a difficult and complicated one which is still far from solution. Early in the present century the German workers Czerny, Keller, and Finkelstein published their investigations on metabolism. Thus the importance of the proper utilisation of the various food constituents was recognised and the disorders resulting from disturbance were appreciated. In consequence all digestive ailments, including diarrhœa, were thought to be due to food errors and metabolic upsets, and so we find that Finkelstein's "decomposition" and "intoxication" were widely adopted.

A satisfactory classification has not yet been evolved, and nowadays much attention is being focused on infection in parts of the body other than the alimentary tract. It almost seems that we have travelled round the globe and are returning to views of disease as expressed by Rush about a hundred and fifty years ago. He noted the cure of articular disease by removing diseased teeth. In these circumstances I hesitate to advance any classification of the infantile diarrhœas, but I suggest that the following has the advantage of being simple yet adequate in the present state of knowledge.

Infective.—Due to known pathogenic organisms—e.g., dysentery and typhoid.

Infectious.—Unknown enteral infection without demonstrable pathogenic organisms.

Parenteral infections.—Upper respiratory tract, bronchitis, pyelitis, and other infections.

Dietetic.—Improper feeding—e.g., excess carbohydrate or fat, and other errors.

INFECTIVE DIARRHŒA

I am not here concerned with the true infective diarrhœas due to known pathogenic organisms. All the infants admitted to the ward had their stools examined bacteriologically, and those with dysentery or typhoid were transferred immediately. In passing, however, it is interesting to record that the incidence of infective diarrhœa was extremely low—in fact less than 1 per cent. of the total admission to the ward. Although I do not wish to infer that dysentery is a rare disease in infancy, it does appear that its recognition on clinical grounds alone can be made with a considerable degree of accuracy. If an infant with diarrhœa is found to be passing blood and mucus in its stools, there is a strong probability that it is suffering from dysentery and should be isolated. Conversely, the presence of blood and mucus in the stools of infants suffering from non-dysenteric diarrhœa is a rarity.

DIETETIC DIARRHŒA

Dietetic diarrhœa also has been of negligible incidence, and such cases as were encountered have been excluded from this series. In any event, they can be detected readily, and most of these infants are treated easily and satisfactorily without admission to hospital. The few that were admitted responded rapidly, and the duration of their stay was short.

INFECTIOUS DIARRHŒA

There were 151 infants who never showed at any time any clinical evidences of parenteral infection, in spite of their being subjected to innumerable searching examinations and investigations. The resident medical staff of the hospital have been taught to favour the view that infantile gastro-enteritis is due to parenteral infection until this possibility has been excluded, and this opinion I have deliberately encouraged so that no infection shall escape detection and treatment.

Some observers state that urinary infection is an almost constant accompaniment of infantile diarrhœa, but this has not been our experience. All severely dehydrated infants are more or less anuric on admission, and in the ordinary way a day may pass before a specimen can be obtained for examination. Feeling that perhaps we were missing some cases, for a time a catheter specimen of urine was obtained from every infant as soon after admission as possible. These specimens were examined in the pathological department of the hospital, and the occurrence of demonstrable urinary infection was insignificant. Moreover, as will be noted later, the incidence of urinary infections in those fatal cases that came to autopsy was negligible, nor in fact was any such infection found post mortem that had not been diagnosed during life. My opinion, based on this experience, is that it is undesirable and unnecessary to submit every infant to catheterisation when they are so desperately ill, unless definite clinical evidence exists.

With regard to infections in the upper respiratory tract, every infant on admission and daily thereafter was carefully and thoroughly examined for such infection. Every case in which there was even the slightest doubt was immediately submitted to an examination by a member of the staff of the ear and throat department of the hospital. In fact, the registrar of this department conducted a routine search for possible infection in almost every infant at short intervals, and if necessary a diagnostic paracentesis was performed. Thus, I consider it can be claimed, with justification, that no infant with demonstrable parenteral infection escaped detection.

Some may think that this group consisted largely of infants suffering from simple dietetic diarrhœa. When, however, it is pointed out that pyrexia was commonly present at some stage of the illness, that a few had been entirely breast-fed, and that the history of the others did not give any suggestion of dietetic errors, I feel that some infection must be the ætiological factor. An enormous amount of research, bacteriological and other, has been carried out by different workers in the investigation of these cases, but the position remains confused. Much of the bacteriological work has been centred on the dysentery and streptococcal groups. From time to time a particular organism has been identified and blamed, but the claims had not been supported by other observers. It is appreciated that the bacteriology of the gastro-intestinal tract is fraught with difficulty and perplexity, but for the present it must be admitted that the case against any particular organism is non-proven. Perchance the investigations regarding virus infections that are now being pursued will elucidate this problem. The death-rate in this group was low—17 cases (11·3 per cent.). In 8 there was no autopsy but in the other 9 no pathological lesions outside the gastro-intestinal tract were found post mortem.

PARENTERAL INFECTIONS

A vast literature is growing up round the question of the association between parenteral infection—particularly in the upper respiratory tract—and infantile diarrhœa, and very widely divergent opinions are expressed. That there is a very close connexion between these two diseases was first propounded many years ago, and this view has continued to receive a considerable volume of support ever since. A few references will serve to demonstrate the opposing schools of thought.

Floyd (1925), Jeans and Floyd (1926), and Marriott (1928), after careful investigation of the problem, came to the opinion that toxicity arising from infection of the mastoid air-cells produced gastro-intestinal symptoms in infants generally diagnosed as acute intestinal intoxication.

During the last several years the incidence and significance of otitis media in early childhood has been carefully studied in the pathological department of the Birmingham Children's Hospital, and Ebbs (1937) has published his results. He analysed the post-mortem findings in the middle-ear and mastoid regions in 880 children varying in age from birth to 14 years. He drew particular attention to the associated gastro-intestinal disturbances and expressed the opinion that the diarrhœa and vomiting syndrome of infants (excluding the dysentery group) was due to or at least associated with parenteral infection somewhere in the body in all cases. He divided them into two groups: the larger consisting of those cases which were secondary to an upper respiratory infection, and the smaller beginning with one of a great variety of parenteral infections which developed the intestinal symptoms during the course of the illness and sometimes as a terminal event. He appreciated that he was quoting post-mortem figures but claimed that his impressions were supported from observations of a large number of clinical cases.

Le Mée (1937) considered that pus found in the middle ear at autopsy was really a post-mortem empyema due to the penetration of the pharyngeal liquid into the middle ear. Ebbs combated this opinion by remarking that, if such were the case, one would expect to find milk and other fluids draining into the middle ear. None was found in any of the cases he examined. This reply, however, hardly meets the case, in that fluid is not likely to remain in the pharynx after death, whereas mucopurulent secretion would.

Another of my colleagues at the Birmingham Children's Hospital (Adams 1937) has also drawn attention to the diarrhœa and vomiting complex in its association with otitis as seen in the practice of otology. In his experience those patients in whom the diarrhœa and vomiting was a late manifestation of a primary otitis adequate surgical treatment was usually successful in arresting it.

McConkey and Couper (1938) analysed their cases of otitis media and mastoiditis in infancy and found confirmation for the theory that the diarrhœa and vomiting syndrome was frequently caused by the presence of otitis media and latent mastoiditis. The death-rate of such infants was 84·8 per cent., being highest in the age-group of 1–3 months.

The other side of the picture has been presented by Johnston and his colleagues (1933), who found that 63 per cent. of their patients with diarrhœa suffered from otitis media, but a control group showed over 60 per cent. of otitis without diarrhœa. Their conclusion was that masked mastoid infection was not a cause of infantile gastro-enteritis.

Similar views were expressed by Yampolsky (1933) after a study of 500 cases. Findlay (1932) was extremely sceptical of any relation between the two diseases. His postoperative results were inconclusive, and his impression was that at times surgical treatment had been definitely harmful. He concluded that it had certainly not been demonstrated that focal sepsis, especially otitis media, was a serious responsible factor.

In this country the incidence of otitis media and mastoiditis is much greater in the winter than in the summer. The chart published by Adams (1937) showed this very well. On the other hand, the opposite has been true for infantile diarrhœa in the past, though my figures show that the curve is now flattening. Were upper respiratory-tract infections so frequently the cause of gastro-enteritis, these two curves should approximate much more closely. Another point of significance is that during 1937 167 children (some of whom were under two years of age) were admitted to the Birmingham Children's Hospital with otitis media or mastoiditis, and in these the disease ran its course without the development of any gastro-intestinal symptoms.

For reasons already stated I cannot subscribe to the opinion that all cases of infantile diarrhœa (excluding dysentery) are due to parenteral infection, either in the upper respiratory tract or elsewhere. To say, as some have, that the infection is so slight as to be unrecognisable merely begs the question. The association between the two has been admirably expressed by Mitchell and his co-workers (1929), who have pointed out that there are four possible explanations of the observed coexistence of these diseases. (1) the infection in the middle ear may cause the gastro-enteritis; (2) the gastro-enteritis may cause the condition in the middle ear; (3) the same cause may explain both; and (4) they may be independent diseases. These workers expressed the belief that no one cause could explain every case, and with this view I am in complete agreement.

Of my 500 patients 231 (46·2 per cent.) showed unequivocal signs of parenteral infection on admission to the ward. This infection was distributed as follows:

Otitis or mastoiditis	125	Nasopharyngitis	5
Bronchitis or pneumonia	74	Cellulitis or dermatitis	5
Stomatitis	11	Peritonitis	2
Urinary infections	8	Osteomyelitis	1

Of these patients 130 died, giving a mortality-rate of 56·3 per cent.

Besides these 231 infants 90 others developed clinical signs of parenteral infection after admission to hospital, and of these 65 died, giving a death rate of 72·2 per cent. In the large majority the infection that arose was in the upper respiratory tract and was usually an otitis or a mastoiditis Yet a further group of 28 that died and came to autopsy were found at that examination to have an infection that had not been detected clinically in 17 the infection lay in the ear, and in the remaining 11 it was a broncho-pneumonia, in many instances only a terminal event, a mode of dying rather than a cause of death The ætiological significance of the infection in those infants who only developed clinical signs some time after admission for their gastro intestinal symptoms is a difficult but very important question The adherents of the parenteral theory will claim that this infection, although only discovered subsequently, was undoubtedly the cause of the diarrhœa I cannot accept this as an established fact It is well known that any nutritional disorder lowers the resistance of an infant to all infections, and this is particularly true of gastro enteritis and its concomitant dehydration My experience has taught me that an acute otitis can cause an acute gastro enteritis—that is to say, is the sole ætiological factor—but I also maintain that an infant suffering from gastro enteritis may very readily contract an acute otitis, but here the otitis is a complication and not the cause I prefer to use the term "secondary otitis" for the latter to differentiate it from the former In this connexion Marriott et al (1933) observed that parenteral infections complicated the picture in 66 per cent of their cases of true dysentery, the mortality was 28 per cent in the group with secondary infections but only 10 per cent in those uncomplicated by such infection

Whatever opinion may be held concerning the part parenteral infection plays in the ætiology of infantile diarrhœa, the treatment of such infection whenever it develops is of paramount importance I cannot agree with Findlay (1932) It is true that an immediate response to surgical treatment was not often seen, but experience has convinced me that we were able to save the lives of some of the babies The operative procedures must be conservative and cautious and the cooperation between the pædiatrician and the otologist close and continuous In any event any parenteral infection increases considerably the gravity of the illness, and this must be constantly borne in mind in assessing the results Half of the children admitted with otitis or mastoiditis died, but of those who developed such an infection as a complication about three quarters succumbed The diarrhœa in the latter group, not being caused by the infection, was less favourably influenced by surgical treatment

(*To be concluded*)

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SPECIFIC IMMUNITY IN ACUTE STAPHYLOCOCCAL OSTEOMYELITIS

WITH SOME OBSERVATIONS ON THE CAUSATION OF PYÆMIA

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DURING the past eighteen months one of us (E C B B) has been reviewing 500 cases of acute osteomyelitis admitted to the London Hospital during the past twenty years It seemed to us both that this work could be usefully expanded by a detailed bacteriological and serological examination of a series of fresh cases of staphylococcal infection

In previous papers (Panton and Valentine 1932 and Valentine 1936) evidence was brought forward indicating that in cases of serious staphylococcal infection the invading strain of cocci usually produces a toxin in which the leucocidin is present in considerable amount whereas the content of α hæmolysin is variable and bears no relationship to the severity of the infection, in addition, the titration of a few samples of serum from such cases seemed to show that in response to the infection the production of anti-leucocidin exceeded that of antihæmolysin Since then Lyons (1937) has claimed that the cocci in 3 hour cultures differ from those incubated longer in the possession of a capsule and has suggested that the development of antibodies capable of action on the young encapsulated cocci is an important factor in staphylococcal immunity

This paper is concerned only with the acute phase of staphylococcal osteomyelitis An attempt has been made to follow the development of specific antibodies in the serum and to correlate the results with the clinical severity of the infection, the persistence of bacteræmia, and the outcome of the disease Since there is no reason to suppose that β hæmolysin is of importance in human infection, attention has been concentrated on the α hæmolysin, leucocidin, and their antitoxins, and on the agglutinin The cases which will be described include 7 cases of acute osteomyelitis in which the patients survived, 2 of fatal pyæmia associated with bone infection and 1 of pyæmia with no bone involvement

TECHNIQUE

The methods used in making toxin and in titrating toxin and serum have already been described (Valentine 1936) Slight improvements in these methods are given below, and the standards employed in quantitative estimations are defined

(1) *α hæmolysin and its antitoxin* were estimated in the usual way with a standard antiserum used as control and rabbit red cells as indicator The strength of toxins will be expressed as the L H dose, the volume of toxin which is still feebly hæmolytic after mixing with 1 international unit of antitoxin Antihæmolysin (α) in serum will be given in *international units*

(2) *Leucocidin and antileucocidin* were titrated against and compared with the Burroughs Wellcome standard K serum, B 8760 Antileucocidin in serum will be given in terms of K Leucocidin in toxin will be expressed in terms of L, which indicates a concentration of leucocidin active after mixing with its

own volume of K serum diluted 1 in 200 but inactive in the same volume of K/100. For testing sera in the present work toxin dilutions have been used which were active when mixed with the same volume of K/125 but inactive against K/100. Three slight modifications have been made in the technique of the test as previously described.

(a) As a routine 0·2 c.cm. of serum or diluted serum is mixed with 0·2 c.cm. of toxin and after five minutes two drops of washed concentrated human cells are added from a Pasteur pipette. This prevents contact between the cell suspension and the side of the tube.

(b) It has been found unnecessary to add human serum before making the films.

(c) The films are now stained with a watery solution of methylene-blue (about 1 per cent.) for two or more minutes, washed, and blotted. The red cells being hæmolysed, intact polymorphonuclear cells can easily be recognised under the ⅙ in. objective and distinguished from lymphocytes and the ghosts of cells which have been destroyed.

(3) *Antibody for young cocci.*—Sera have also been examined for their ability to agglutinate homologous suspensions of young cocci. The technique which has been followed is similar to that described by Lyons (1937), except that ordinary nutrient broth has been used, without the addition of glucose, and a somewhat larger inoculum made. This procedure seems to give suitable suspensions of the typical large cocci. In some cases daily subcultures had to be made for a few days before a stable suspension was obtained. The suspensions were controlled against saline and normal rabbit serum. The development of agglutinins in the serum appears to be very slight in cases of acute osteomyelitis during the first three weeks; hence positive reactions at this stage were only obtained with undiluted serum. The strength of the reaction will be indicated by the number of + signs, ++++ denoting complete agglutination.

(4) *Blood-culture.*—Blood for culture and serum tests was taken into a 10 c.cm. syringe, and 1 c.cm. was at once mixed with a small volume of citrate, brought back to the laboratory, and incorporated in an agar-plate culture. The rest of the blood was allowed to clot in a sterile tube, and as soon as possible the serum was removed with aseptic precautions. Broth was then added to the clot and incubated.

(5) *Preparation of toxin.*—The technique for toxin production has been previously described. A mixture of 30 per cent. CO_2 and air has been used latterly. It does not seem to matter whether incubation is carried on for 24 or 48 hours. It must be remembered that the practice of filtering toxins through candles or Seitz filters removes some toxin, especially leucocidin, and thus often exaggerates differences in titre in toxins prepared from different strains. Throughout the present work toxins have been passed through Seitz E.K. disks before titration.

CASE-RECORDS OF PATIENTS WHO SURVIVED

Throughout this paper the day on which symptoms of bone infection appeared will be regarded as the first day of disease, and subsequent events will be dated accordingly.

CASE 1.—Male, aged 11, had fever and pain in an ankle after injury. He was admitted on the fifth day, delirious, with extreme tenderness over lower third of tibia and spleen palpable. Operation: the bone was drilled, and thin pus was found in the medulla. His general condition improved greatly after operation and reached quiescence after the second week. In the third month a quietly spreading lesion was found in the ileum. *Primary lesion:* probably a small abscess in the roof of the mouth, but the history was indefinite.

CASE 2.—Female, aged 9, admitted after four days' pain in an ankle. She was ill but coöperative. At operation on admission pus was found under the periosteum of the tibia, oozing from the medulla at the epiphysial line; the bone was drilled for drainage. The patient was much improved after operation, but some toxæmia remained till the end of the second week. *Primary lesion:* none found.

CASE 3.—Male, aged 13, admitted after three days' pain in a hip. Illness was severe, but there was no rigor or delirium. The original lesion in the ileum spread slowly to involve half the pelvis. No operation was done, but the hip-joint was immobilised. There was long-continued fever due to spread of the local lesion; there was no distinct crisis in the illness. *Primary lesion:* a large boil on the back, starting four days before the bone lesion.

CASE 4.—Male, aged 9, admitted after three days' pain in a hip. He was never seriously ill, but there were signs of arthritis of hip. No operation was done, but the hip-joint was immobilised. The course of the illness was mild. The diagnosis was uncertain till radiography in the sixth week showed a lesion in the neck of the femur. *Primary lesion:* a crop of shallow pustules round the mouth.

CASE 5.—Male, aged 14, had a sudden pain in a knee with shivering and nausea. He was admitted on the second day, ill but not delirious, with signs over the upper part of the tibia. At operation pus was found in the tibia after drilling the bone; third day: delirious and incontinent for two days; seventh day: signs of infection of the lower third of the tibia; eighth day: fluid was found in the knee; tenth day: the patient being no better, 50 c.cm. of antitoxin was administered intramuscularly; twelfth day: the general condition for the first time definitely improved, and the knee was aspirated. The whole diaphysis of the tibia was ultimately involved, with greatest destruction in the upper third. *Primary lesion:* none found.

CASE 6.—Female, aged 18, had pain in the right thigh following one week after an attack of "influenza" preceded by an infected corn. She was admitted on the fourth day with no delirium, but she was feverish and in great pain. At operation, pus was found stripping up the periosteum; the bone was drilled, but no pus was found in the medulla. There was subsequent steady improvement. *Primary lesion:* infected corn.

CASE 7.—Male, aged 13, had pain in a knee after injury. He was admitted on the fourth day not seriously ill, but with signs localised below the tibial tuberosity. Sixth day: at operation the periosteum was found stripped over a small area; the bone was not drilled. There was subsequently steady improvement, but later radiography showed involvement of the upper third of the bone. *Primary lesion:* none found.

BACTERIOLOGICAL AND SEROLOGICAL FINDINGS

The results in these seven surviving patients are shown in the table. Each examination of the blood is listed under the day of disease on which the sample was taken, and at the end of the table is given the titre of the toxin produced by the infecting strain. In fig. 1 are shown the antihæmolysin curves in the seven cases, and in fig. 2 the antileucocidin curves. (Since the highest titres of antihæmolysin and antileucocidin likely to be found in human serum are respectively about 30 units and 3K, these levels have been made comparable in the figures.)

The level of antihæmolysin in normal human serum averages about 0·5 unit and seldom rises above 1 unit. Antileucocidin usually lies between 0·01K and 0·05K

SPECIFIC ANTIBODIES IN SERUM IN ACUTE STAPHYLOCOCCAL OSTEOMYELITIS

Day of disease	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
2					(a) 0·2 (b) 0·01K (c) – (d) +*		
4				(a) 0·4 (b) 0·02K (c) – (d) –		(a) 0·2 (b) 0·01K (c) – (d) +1	
5	(a) 0·4 (b) 0·08K (c) – (d) +*	(a) 0·4 (b) 0·08K (c) – (d) +*	(a) 0·4 (b) 0·08K (c) – (d) +20				(a) 0·4 (b) 0·04K (c) – (d) –
6		(a) 0·4 (b) 0·08K (c) ++ (d) –		(a) 0·4 (b) 0·02K (c) – (d) –	(a) 0·2 (b) 0·01K (c) – (d) –	(a) 0·2 (b) 0·03K (c) trace (d) –	*
7			(a) 0·4 (b) 0·16K (c) – (d) +12				*
8					(a) 0·2 (b) 0·04K (c) – (d) +0		
9			(a) 0·4 (b) 0·32K (c) – (d) +12	(a) 0·4 (b) 0·02K (c) – (d) +0		(a) 3·0 (b) 0·32K (c) + (d) –	
10	(d) +4				50 c cm antitoxin		(a) 0·4 (b) 0·08K (c) – (d) –
12	(a) 2·0 (b) 2·5K (c) – (d) +2		(a) 1·5 (b) 2·0K (c) – (d) +20		(a) 1·0 (b) 1·0K (c) – (d) –		
13				(a) 0·8 (b) 0·04K (c) – (d) –		(a) 13·0 (b) 0·64K (c) + (d) –	
14		(a) 8·0 (b) 0·64K (c) – (d) –	(a) 3·0 (b) 2·5K (c) – (d) –		(a) 1·0 (b) 1·3K (c) + (d) –		*
15							(a) 0·8 (b) 0·64K (c) – (d) –
16	(a) 2·0 (b) 3·0K (c) +++ (d) –		(a) 3·0 (b) 2·5K (c) + (d) –				
18				(a) 7·0 (b) 0·16K (c) trace (d) –			
20						(a) 11·0 (b) 0·64K (c) + (d) –	
21		(a) 5·0 (b) 0·5K (c) – (d) –			(a) 0·4 (b) 1·4K (c) ++ (d) –		(a) 1·5 (b) 0·64K (c) – (d) –
Titre of toxic filtrate	LH 0·2 c cm, 8L	LH 0·5 c cm, 4L	LH more than 1 c cm, 10L	LH 0·05 c cm less than 1L	LH 0·5 c cm, 8L	LH 0·2 c cm, 4L	LH more than 1 c cm, 1L

No examination of blood took place on the 1st 3rd 11th 17th, and 19th days of disease

* Quantitative blood-culture not done

(a) denotes titre of antihæmolysin
(b) " , antileucocidin
(c) denotes titre of agglutinin
(d) " blood culture with number of colonies per c cm

Homologous agglutinins, with one exception (case 9), have not been found in the first sample of serum taken

In the seven surviving cases the clinical illness was severe in cases 1, 3, and 5, moderately severe in cases 2 and 6, and relatively mild in cases 4 and 7 If the serological findings are now examined in this connexion, it will be seen that in the three most serious cases the response in *antihæmolysin to the* infection was slight or negligible, whereas that in antileucocidin was striking In the milder cases there was sometimes a considerable rise in antihæmolysin, whereas that of antileucocidin, though constantly present, was limited The moderate severity in cases 2 and 6 was probably due to the fact that in the former the tension within the bone was partially relieved by the escape of pus at the epiphysial line, whereas in the latter the infection was subperiosteal Cases 4 and 7 will be considered later in relation to the toxigenicity of the infecting strains

If cases 1, 3, and 5 are now compared with each other, there can be no doubt that the condition of case 5 was more critical than that of the two others This cannot be correlated with the degree of bacteræmia, which was obviously heavier in cases 1 and 3, but it is in accordance with the original titre of antileucocidin in the three cases and further, the general condition of case 5 improved at once when a high titre was established This patient received 50 c cm of horse antitoxin (titre about 250 units and 2·5K) on the tenth day intramuscularly, because his condition remained critical and the blood-culture was again positive Between the eighth and the

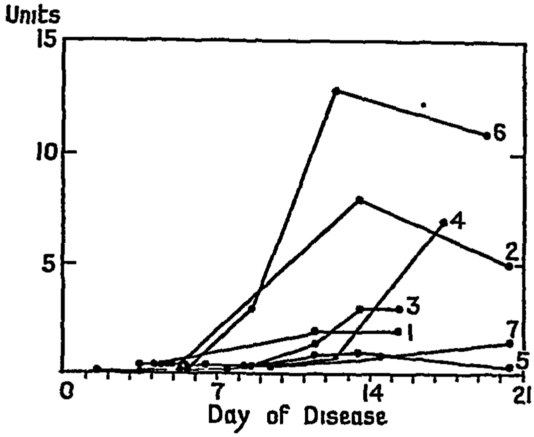

FIG. 1—*Antihæmolysin curves in seven cases of acute staphylococcal osteomyelitis*

twelfth days the serum antihæmolysin rose from 0 2 to 1 unit, thereafter falling back to 0 4 unit This rise was presumably entirely due to the injected serum. During the same period the antileucocidin rose from 0 04K to 1K, a rise of which not more than 0 1K (at most) could have been directly due to the injected antitoxin After the twelfth day the curve flattened out but ultimately reached the record figure of 4K. It seems possible that the rapid rise was due to the relief afforded to the antibody-forming mechanism by the injected antileucocidin The clinical improvement coincident with this rise was striking.

TOXIGENICITY OF STRAINS

It will be seen that, with the exception of those from cases 4 and 7, in which the general symptoms were least severe, the infecting strains produced a potent leucocidin. On the other hand, the production of hæmolysin varied considerably and was highest in case 4. The lesion in this case was in the neck of the femur, usually a dangerous site, and the mildness of the infection cannot be related to the original titre of the serum (0 4 unit and 0 02K) but only to the feebleness of the leucocidin produced by the infecting strain.

When cultures were obtained from more than one source in the same patient—e g , from blood, pus, and primary lesion—toxins were prepared from each strain and in all cases were found to be reasonably comparable Thus in case 6 four strains were obtained : from the infected corn, blood-culture, femoral pus, and the throat, where they were present in large numbers. The titres of the toxins produced were LH 0·2 c cm. (four strains), 4L (throat strain), and 2–4L (three other strains)

AGGLUTININ FOR YOUNG COCCI

As has already been stated, only traces of agglutinin for young cocci were found in the serum in the early stages of osteomyelitis None the less, in cases 1 and 3, the only patients to show a considerable bacteræmia, it is noteworthy that the development of *antileucocidin did not directly affect the bacteræmia*, the cessation of which seemed to be more closely related to the appearance of agglutinins. A similar tendency may be seen in cases 2 and 7. Case 5 was interesting in that the slight and transient bacteræmia bore no relationship to the severity of the infection. It was constantly observed that the strain of cocci in this case, whether derived from blood or pus, had a tendency towards autoagglutination. It is conceivable that the low degree of bacteræmia was due to the "rough" character of the organism

CASE-RECORDS OF FATAL CASES

CASE 8 —Male, aged 9. First day : acute pain in a hip ; second day : patient admitted in delirium ; third day : thin pus aspirated from the hip-joint ; fifth day : death.

Primary lesion : none found.

Serum.—Second day : less than 0·1 unit, 0 005K, agglutination negative. Blood-culture showed *Staphylococcus aureus.* Fourth day : less than 0 4 unit, 0 0025K, agglutination negative. Blood-culture showed 900 colonies per c.cm.

Toxin.—LH 0 2 c.cm., 4L.

Post mortem —Pyæmia and acute osteomyelitis of the neck of the femur.

CASE 9.—Female, aged 12. First day: vomited after tea and during the night ; second day sent to the local hospital with a temperature of 102° F. and a pulse-rate of 132, and complaining of vomiting and of pain in the right upper arm ; third day : pain severe in the right shoulder ; fourth day . epistaxis ; sixth day : pain more general and discrete red spots on the limbs ; seventh day : pericardial friction : eighth day : admitted to the London Hospital in delirium ; ninth day : hyperpyrexia and death.

Primary lesion : an untreated whitlow opposite the base of the left thumb-nail, with little surrounding reaction and quite unlike the pyæmic spots on the skin elsewhere. From its appearance it was not of very recent origin, but no definite history was obtainable.

Serum.—*Eighth day : 3 units, 0 16K, agglutination :* S/1 + + + +, S/5 +. Blood-culture showed about 1000 colonies of *Staph. aureus* per c.cm.

Toxin.—LH 1 0 c cm., less than L.

Post mortem —General pyæmia, osteomyelitis of the upper end of the shaft of the right humerus, and a whitlow on the left thumb beside the base of the nail.

Microscopical report by Dr. J. R. Gilmour on a section across the terminal phalanx of the left thumb

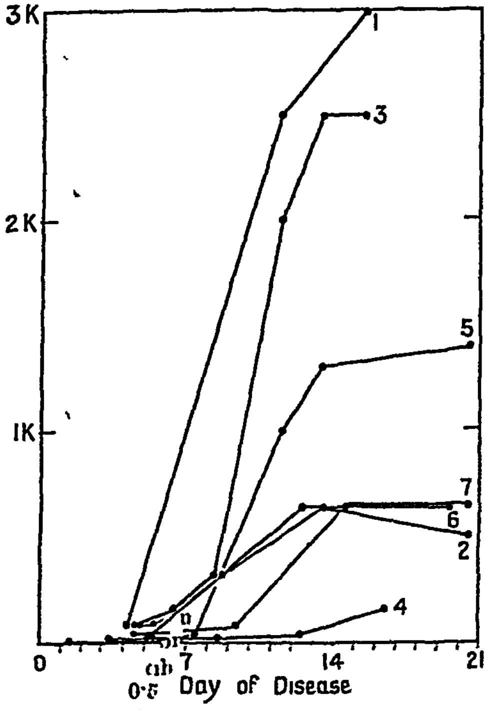

FIG. 2—Antileucocidin curves in the same cases

and slightly proximal to the whitlow "Section shows two small veins containing purulent thrombus and numerous cocci "

CASE 10 —Male, aged 60 After ten days' indefinite malaise, he felt as if a cold were coming and had pains in the joints , second day worse, two rigors with vomiting , third day becoming semiconscious and incontinent , *fourth day admitted*, with red purpuric spots becoming pustular, and an untreated blister on the left heel , sixth day death

Serum —Fourth day 0 4 unit, 0 12K, agglutination negative *Blood-culture showed about 1000* colonies of *Staph aureus* per c cm

Toxin —LH 0 2 c cm , 4L

Post mortem —General pyæmia, with acute inflammation of the skin of the left heel, there being red discoloration of the heel with a cavity, containing reddish purulent-looking material between a thick layer of hard skin and the indurated area of the subcutis A blister in the skin and a thrombosed vessel in the subcutis lay on the posterior aspect of the heel just above the cavity No purulent cellulitis or thrombosis was found in the posterior tibial veins *Elsewhere there was no osteomyelitis, but* pyæmic abscesses were found in many organs Many pyæmic abscesses and petechial hæmorrhages were present in the skin

Microscopical report by Dr Gilmour on a section from the heel "Section shows in the subcutis a small artery with subacute inflammation and necrosis of its wall and thrombosis obliterating its lumen, and many small veins containing thrombus infiltrated with cocci or cocci alone "

In such cases as these bacteræmia and pyæmia result from the formation of infected thrombus in veins Many bacteria, with or without fragments of clot, are thrown into the blood stream and, if the process is sufficiently extensive and prolonged, it must end in the death of the patient The relative frequency of cases of general pyæmia due to staphylococcal infection is probably to be associated with the ability of the organism to form coagulase

In case 8 no primary lesion was found, and septic thrombosis presumably occurred in the veins leading from the osteomyelitic focus By analogy with the surviving patients the almost complete absence of specific immunity in this patient would make such an event probable

In case 10 there was an infected blister which by itself constituted only a minor lesion, as is shown by the fact that it had received no treatment It may be assumed that in consequence of this neglect the infected material, being unable to burst through the tough skin of the heel, tracked inwards and ultimately caused septic thrombosis in the underlying vessels leading to general pyæmia It is probable that no degree of specific immunity could protect against the results of such an accident, and this case is quoted here as an example of death occurring through the neglect of a minor superficial focus of infection

In case 9 there was a focus of osteomyelitis in the humerus the toxicity of the infecting strain was low, and on the eighth day the levels of all three antibodies in the serum were distinctly high Comparison with the findings in the surviving patients makes it surprising that general pyæmia should have supervened if this were a case of straightforward osteomyelitis , but the presence of septic thrombosis in the veins of the thumb, similar to that present in the heel in case 10, is sufficient to account for the development of pyæmia, of which the focus in the humerus was one of the earliest results

In cases 9 and 10 the primary lesions showed relatively little surrounding reaction and had not caused enough pain to ensure their treatment In each case the affected site was one where the skin tends to be hard in consequence of friction or exposure , hence without assistance the pus could not escape In such conditions, which might well result from the neglect of a minor injury, it is more likely that the infection would be allowed to spread until veins of significant size were affected than in the case of a more acute and painful lesion which demands rest and other treatment Even in the latter case, however, it seems possible that small venules may become infected and may be responsible for the development in susceptible patients of foci elsewhere in the body It is obvious that the degree of septic thrombosis and of the resulting blood infection might vary greatly both in intensity and duration in different patients, and it is possible that the bacteræmia commonly met with in the acute stage of osteomyelitis may sometimes depend for its maintenance more on a persisting primary lesion than on the secondary focus in the bone This suggestion is, of course, only conjectural, but it may be noted that, among the surviving patients, cases 1 and 3 had a relatively heavy and persistent bacteræmia, and that in each of these cases the apparent primary lesion persisted for some days after admission to hospital with osteomyelitis In any case the fatal results of neglect in cases 9 and 10 indicate the importance of giving immediate and careful attention to any detectable primary focus, whether important secondary lesions are present or not

CONCLUSIONS

Antileucocidin —The short series of cases which has been described shows that in response to deep-seated staphylococcal infection in man the spontaneous production of antileucocidin bears a close relationship to the severity of the clinical condition It is intended to treat a further series of cases with serum rich in this antitoxin as early as possible in the course of the disease and to compare the results with those obtained in the present series

Antihæmolysin —No evidence has come to light suggesting that antihæmolysin (α) is likely to be of much value in treatment during the acute stage of the infection

Agglutinin —There is some indication that the disappearance of staphylococci from the blood-stream in acute osteomyelitis may often coincide with the appearance of agglutinins in the serum The low titres obtained during the acute stage and the small number of cases (two) with considerable bacteræmia make any definite conclusion on this point impossible

The local lesion —In at least two cases, those with pelvic lesions—cases 1 (secondary) and 3—there was evidence of continued spread of local infection after the establishment of an apparently satisfactory level of general immunity But it is hoped that, by improving the general condition of the patient in the first week by the use of antitoxin, the resistance of the tissues at the site of infection may be increased

Fatal pyæmia —Pyæmia is the result of septic venous thrombosis which may occur either in association *with the bony lesion of osteomyelitis or with* a superficial, apparently minor, focus It is suggested that, when such a minor focus is found preceding the onset of osteomyelitis it may in some cases be the main source of bacteræmia and of any further lesions which may develop in the course of the illness

Our thanks are due to Dr P N Panton and Prof S. P Bedson for their advice and to the house-surgeons and sisters in charge of the cases for their interest and coöperation. Special thanks are due to Dr. Gilmour for his help and description of sections.

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FIXATION OF THE OSTEO-ARTHRITIC HIP BY NAILING

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It would be generally agreed that patients with severe osteo-arthritis of the hip derive very little permanent benefit from physiotherapy and are relieved only by operative measures. Many different operations are used for this condition, notably capsulotomy, reconstruction operations, arthroplasty, extra-articular and intra-articular arthrodesis, and MacMurray's osteotomy. The fact that all these are operations of considerable severity restricts their use to the comparatively young and healthy Of all the operations arthrodesis by bony fusion is the most certain method of relieving the pain; but this is a formidable procedure, and the operation described below is intended to take its place as a method of fixing the hip in the aged. The operation is a slight one and entails fixation of the hip by a pin only, thus avoiding the trauma and shock of the open operation of arthrodesis.

The operation of arthrodesis often failed to effect bony fusion owing to the difficulty of obtaining complete immobilisation by the plaster-of-paris cast. In 1935 Watson Jones (1938) overcame this by inserting, at the time of the operation, a short nail through the anterior part of the neck, backwards and inwards, into the acetabulum. This ensured complete immobilisation of the rawed bony surfaces, and union was obtained in a considerably larger proportion of cases

In 1935 it seemed to me that it would be a considerable advantage if, in some cases, particularly the aged, fixation could be achieved with the pin only, without the open operation of arthrodesis Therefore an extra large Smith-Petersen type of nail was inserted, under X-ray guidance, through a small incision below the great trochanter. This simple operation has been done in twelve subsequent cases which are briefly analysed here. Although the series is small, it seems to indicate that the operation is the method of choice in a certain type of case—i e, those in which bony fusion would be indicated if the patient were younger or in better health. The operation of inserting the pin alone avoids both shock and the incarceration of the patient in a plaster cast and is consequently safer. Complete immobilisation of the hip is obtained with relief of pain, and the patient can be up and walking within a few days The operation may be used (1) when the patient is over 55, (2) when there is gross limitation of movement of the hip, and (3) when pain is excessive—i e, severe enough to interfere with sleep. When there is gross deformity of the hip this can be first corrected by a subtrochanteric osteotomy. This may, in itself, relieve symptoms. If not, a pin can be inserted subsequently.

TECHNIQUE

The technique of the operation is simple, especially to those who have experience of the Smith-Petersen pin in fracture of the neck of the femur. It is desirable to fix the hip in a neutral position, where the thigh is neither adducted nor abducted, with some external rotation and with a flexion of 25°, to make the sitting position comfortable. As the patient lies on the operating table, there is always lumbar lordosis sufficient to produce from 25° to 30° of fixed flexion. If the hip is flexed more than this, the patient walks badly and is liable to suffer from low back strain subsequently. Also it seems that the patient walks better when the hip is fixed with a slight degree of external rotation than when it is fixed with no rotation. Gas-and-oxygen anæsthesia is sufficient. Correct position of the pin is best obtained if the patient is on a Hawley table with two cassettes arranged so that anteroposterior and oblique radiograms can be taken. A 2 in. incision is made over the lateral aspect of the upper end of the femur with its uppermost limit at the base of the great trochanter. Two guide wires are then drilled from the base of the great trochanter upwards and medially so as to pass through the upper part of the neck of the femur into the thickened portion of the ilium above the acetabulum. Owing to the great strain thrown upon the pin, it is most important that it should have a firm purchase in this specially thick area of bone.

Although a fair indication of the position of the tip of the pin is obtained from the anteroposterior view only (fig. 1), its position can be seen with much more accuracy if a special oblique view is taken. In this the X rays are directed so that the part of the ilium above the acetabulum into which the pin penetrates is seen in profile (fig. 2). From an anteroposterior view alone it is easy to get an exaggerated impression of the width of the buttress of bone passing from the acetabulum to the sacro-iliac joint, and if the pin has been inserted behind this buttress in error it may escape notice Thus, in an anteroposterior view alone it is possible to have an apparently satisfactory picture, even though the tip of the nail is not firmly engaged in the ilium

When radioscopy has shown that one guide wire is in a satisfactory position, the other is withdrawn and the special Smith-Petersen nail hammered into position. Owing to the acute angle between the wire and the femur, its insertion will be facilitated if some cortex at the site of the insertion of the wire is removed by chisel This will also allow the pin to be slightly countersunk so that new bone can form over it to prevent it slipping out.

Sometimes the pin tends to be extruded, and this has been obviated by the insertion of a small nail into the shaft of the femur, at right angles to the pin, through a hole in its head, as recommended by B. H. Pidcock. The skin is closed by two or three interrupted silkworm-gut stitches, and a dressing is placed over it. There is practically no shock, and the patient is up and walking in a few days

There is one serious drawback which has been noted in two of the cases, and that is the liability to a subtrochanteric fracture of the shaft of the femur through the site of the insertion of the pin Owing to complete fixation at the hip-joint it appears that any extra strain on the leg is concentrated in the region where the pin is inserted, and that in elderly patients with thin and rather densely ossified femurs there is a tendency to fracture in that region. This entails immobilisation in plaster for ten weeks, which is a serious drawback but possibly not so great as at first seems, when it is realised that patients with these symptoms were formerly often immobilised in a plaster cast with the object of relieving the pain

Occasionally the relief of pain is not immediate and only comes gradually, and there has been one case in which there was no relief. This was not accounted for. In two of the earliest cases pain recurred after a few weeks owing to partial extrusion of the nail. The manner in which this complication is now avoided has been mentioned.

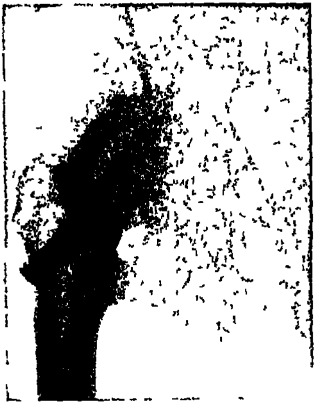

FIG 1—Radiogram of osteo-arthritic hip fixed with pin (anteroposterior view)

There seems to be no danger of the pin causing sufficient absorption of bone in the ilium for the fixation to become insecure. The first operation was performed three years ago, and the fixation still seems as firm as ever and radiograms show no evidence of absorption of bone.

In the early cases of this series a specially long, heavy canalised tri fin pin with a diameter of 20 mm was used. Owing to having split a great trochanter in the insertion of one of these large pins, it was decided to use a pin of smaller cross section, and the later cases have been done with the type of pin used by Watson Jones. This has the diameter of 15 mm and is thus stouter than the ordinary canalised Smith Petersen pin used in fractures of the neck of the femur. The latter is 13 mm in diameter.

The pins are made by Down Bros, who have done a great deal of experimental work on them. They have had no instance of a stout pin breaking when used for arthrodesis. However, there has been one instance of fracture of the pin when a long pin of the calibre of an ordinary fracture pin was used.

CASE RECORDS

CASE 1.—A female, aged 63, had pain in a hip for six years, with gross limitation of range.

June 27, 1935: pin was inserted; June 30: patient was up and walking without pain; Oct 16: pin, having slipped a little, was driven in by open operation about 1 cm and fixed with a nail through a hole in the head of the pin; Oct 29: patient was up and walking without pain; Oct 19, 1938: fixation was complete and the patient had no pain and led a normal life.

CASE 2.—A female, aged 30, with chronic arthritis of hip, had pain in the right hip for three years.

Oct 15, 1935: pin was inserted; *Jan. 2, 1936*: patient had no pain and fixation was complete. January, 1939: patient had no pain and fixation was complete.

CASE 3.—A female, aged 60, had pain in the left hip for two years, with gross limitation of range.

July 7, 1936: pin was inserted; July 25: the upper end of the femur was fractured while the patient was walking, and a plaster spica was applied; May 5, 1937: the fracture had united, the patient was walking well, and the pin had slipped out a little; May 7: the pin was driven in further and fixed by a nail through a hole in the head of the pin; May 17: the patient had no pain on walking; May 21: she was discharged with no pain and no further symptoms.

CASE 4.—A male, aged 65, had an intracapsular fracture of the neck of a femur in December, 1936, and was treated by Smith-Petersen pin operation, later followed by osteo arthritis of the hip.

July 5, 1938: there was pain in the hip and limitation of movement; the Smith-Petersen pin was removed, but there was no improvement in pain in the hip, and radiography showed much osteo-arthritis; Nov 18: pain continued in the left hip; Nov 25: pin was inserted; Dec 21: the patient was up and walking; Jan 6, 1939: there was complete fixation, and the patient had no pain and was walking well.

CASE 5.—A female, aged 65, had a painful hip for two years, which now kept her awake at night. There was flexion-extension movement from 100° to 150°, no free movements, 5° fixed adduction, and some fixed external rotation.

Jan 7, 1937: pin was inserted; Jan 21: the patient was up and walking, with no pain; November, 1938: she wrote that she had no pain and walked short distances in comfort.

CASE 6.—A female, aged 67, had pain in a hip for three years, which was severe lately. There was some low back pain. *There was gross limitation of movement*, the hip being almost ankylosed with about 10° of abduction and some external rotation.

June 2, 1937: pin was inserted; June 9: the patient was up and walking without pain; February, 1939: she had had no pain since, and no low back pain now. She led a normal life. *Radiography* suggested some absorption of bone, but fixation was complete.

CASE 7.—A male, aged 55, had pain for a year, with gross limitation of movement.

June 9, 1937: pin was inserted; June 18: the patient was up and walking without pain; June 29: while walking he heard a loud report in the region of his hip; radiography showed a subtrochanteric fracture of the femur, and a plaster spica was applied. Sept 24: the plaster was taken off and the patient got

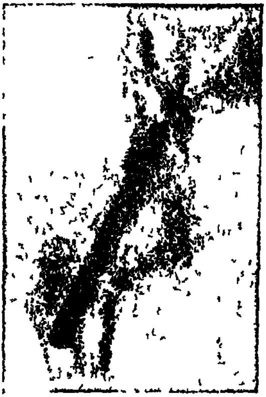

FIG 2—Special oblique view to show true width of ilium above acetabulum. The patient was on a Hawley table with a pelvic rest and a post of aluminium permeable to X rays. The central ray was directed from below the sound side towards the posterior superior spine of the ilium on the affected side. The direction was 30° upwards to the horizontal and 30° cranially to the transverse plane. The cassette was held over the anterolateral aspect of the affected hip at an angle of 60° to the horizontal.

up; Nov. 26: there was pain in the left hip, and the Smith-Petersen pin was removed; Jan. 12, 1938: the hip was still painful, with limited range. An open operation and bone-graft arthrodesis were performed. In this case the nail completely failed to relieve pain. That this cannot be due to incomplete fixation is indicated by the fact that the patient sustained a fracture at the point of insertion of the pin.

CASE 8.—A male, aged 58, had pain in a hip for three years, which had disturbed his sleep lately. He had only a small range of movement. There was no deformity.

July 8, 1937: pin was inserted; July 15: there was no pain, and the patient was up and walking; Feb. 9, 1939: there was complete fixation and no pain. The patient had walked ten miles during the day with no discomfort. He had worked as a navvy, for a period, for A.R.P. last September.

CASE 9.—A female, aged 65, had pain in the left hip for a year, with only 5° of free flexion.

Sept. 22, 1937: pin was inserted; Sept. 27: the patient was up and had no pain; Dec. 1: her general condition was poor; Dec. 2: the patient, while being washed, suddenly collapsed and died. Pulmonary embolism was found post mortem.

CASE 10.—A male, aged 70, had pain in a hip for many years, which had become worse lately and disturbed his sleep. There was a small range of movement with a few degrees of flexion-extension and 5° of fixed adduction.

Dec. 9, 1937: pin was inserted; Dec. 28: the patient was up and walking, with some pain; Jan. 27, 1938: there was no pain now, fixation was complete, and patient walked well; Aug. 4: a day or two previously he had a bad fall, hurt his hip, and went to another hospital, where the pin was removed, no fracture being found; Dec. 1: he came to hospital and asked to "have the pin put back in again," which was done; January, 1939: he walks very well and dances with agility.

CASE 11.—A female, aged 55, had pain in the left hip for fourteen years, with only 5° of free movement.

June 8, 1938: pin was inserted; June 18: the patient was up and walking without pain; January, 1939: no pain either at rest or while walking.

CASE 12.—A male, aged 58, had pain in the right hip for three years, which disturbed his sleep.

Jan. 12, 1939: pin was inserted; Jan. 23: the patient was up and walking without pain.

Thus, it is seen that one died from pulmonary embolism 3 months after the operation; in one there was no relief of pain; in two there was a subtrochanteric fracture; and in two the pin slipped and the pain recurred, but in these the symptoms were immediately relieved by a small secondary operation entailing hammering of the pin with secondary fixation. Although the operation is not free from complications, yet the plight of patients with severe osteo-arthritis of the hip is such as to justify a procedure which has given relief in a considerable proportion of cases with little risk.

SUMMARY

Twelve cases are reported of osteo-arthritis of the hip treated by fixation with a Smith-Petersen pin. The operation is simple and relatively slight and seems to be useful in osteo-arthritis in the aged and infirm.

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NAIL FIXATION OF OSTEO-ARTHRITIC HIP WITHOUT EXPOSURE OF JOINT

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THE severe disability of a painful osteo-arthritis of the hip which has failed to respond to physiotherapy is a frequent indication for operative treatment. This usually involves exposure of the hip-joint or prolonged plaster immobilisation, or both. Either may be precluded by the age or general condition of the patient, and in these circumstances fixation of the hip-joint by a modified Smith-Petersen nail without open exposure has been carried out by various workers, notably Watson Jones (1938) There is no doubt that the procedure gives relief, but only time can show whether the results are as lasting as those of open arthrodesis

The purpose of this paper is to describe a technique for nail fixation without exposure of the joint, ensuring the least disturbance of frail patients and relatively quick restoration to activity.

SPECIAL PROBLEMS

The chief problems that present themselves are: (1) inserting accurately a guide over which the nail can be threaded; (2) estimating the length of nail required; and (3) embedding the head of the nail without risk of splitting the femur. For the solution of each of these problems we have devised a special instrument.

(1) *Insertion of the guide.*—In fixation of the hip the guide must be placed much more obliquely than for fracture of the femoral neck. It must enter the femur lower down the shaft and pass up through the mid-plane of the neck so as to leave the head in its upper half Thence it penetrates the acetabulum into the thick bar of bone which extends behind the pelvic brim as far as the sacro-iliac joint. We have found by experiment that this can be achieved by introducing a guide 1·25 cm (0 5 in) behind the anterior surface of the femoral neck with the joint placed in the best position for ankylosis—namely, about 30° of flexion with little, if any, abduction or rotation. Entry of cortical bone at an oblique angle is difficult or impossible without the use of some form of director to check the tendency of the guide to ride upwards over the surface instead of penetrating it.

It occurred to us that the accurate introduction of the guide would be facilitated by adapting an introducer previously described by one of us (Bailey 1937) for nailing the fractured femoral neck. An additional reversible "arthrodesis" block was designed to fit the original blade and handle of the instrument (fig. 1). The blade (A) rests on the anterior surface of the neck of the femur, and the arthrodesis block (B) lies flush with the shaft (fig 2 A and B) The block is traversed by five converging guide holes, each 3 cm. long, which lie 1·25 cm. (½ in) behind the blade and so automatically direct each guide through the mid-plane of the neck Fig 3 shows the angles which may be obtained and fig. 4 (A and B) a suitably directed guide

(2) *Estimation of length of nail*—Skiagrams provide a magnified image, and the extent of magnification cannot be standardised because the distance between object and film varies in patients of different build.

One of us (H J B) has devised a simple expanding scale which can be calibrated from the first film in a matter of seconds so that measurements on the films are read directly in units equivalent to centimetres in the body, mental arithmetic is wholly eliminated. The instrument is shown in fig 5. The scale itself consists of a strip of rubber (A) about 2·5 cm (1 in.) broad graduated in centimetres, it is fixed in a telescopic frame (B) which can be extended by the milled screw (C). The method is as follows. The guides are graduated so that the actual depth to which any is buried is known. Let it be supposed that one is introduced for 12 cm and that an anteroposterior film is taken to check its position. The expanding scale is applied to the film along the magnified image of the embedded part of the guide and is extended until the 12 cm reading on the scale corresponds with the image. The whole length of the graduated part of the rubber strip is almost uniformly extensible, and distances on the films can now be measured in units which correspond with centimetres in the body. This statement is strictly correct only if the guide has been introduced in a plane parallel with that of the film, in practice this is approximately the case.

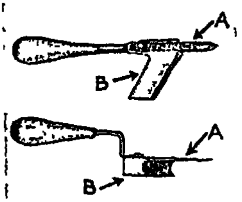

Fig 1—Introducer with "arthrodesis" block. (A) blade, (B) block

(3) *Embedding the head of the nail*—We consider that, for permanent fixation, the head of the nail should be embedded in bone. To facilitate this one of us (E T B) has designed a canalised trephine (fig 6). The cutting head is hollow and cylindrical, 2 cm long and of the same diameter as the head of the nail. The shaft is canalised to take a 2·5 mm guide and has been made to fit the chuck of the "Holborn" electric motor. The trephine is threaded over the selected guide and removes a disk of bone leaving an aperture through which the nail is driven into soft cancellous bone without risk of splitting the femur. The head of the nail is buried beneath the surface leaving the aperture to fill in subsequently with new bone.

PROCEDURE

The position for fixation is secured preferably before the time of operation, a period of weight traction being used if necessary. A spinal anæsthetic (Decicain) is given after premedication with Omnopon and scopolamine. If an orthopædic table is not used, the buttocks, protected by gamgee, rest on a tunnel of Atkinson type, consisting of a shallow wooden box with a sliding panel for passing cassettes beneath

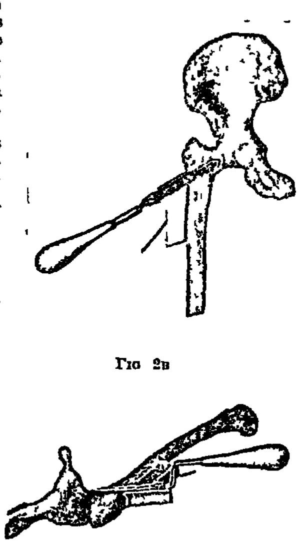

Fig 2A

Fig 2B

Fig 2—The introducer applied to the femur with the blade resting on the anterior surface of the neck and the block in apposition to the shaft. (A) anteroposterior view, (B) lateral view

Fig 3

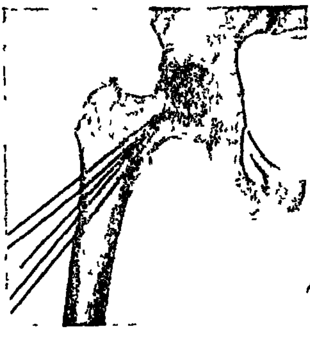

Fig 3—Anteroposterior radiogram of guides to show the directions obtainable

Fig 4A

Fig 4B

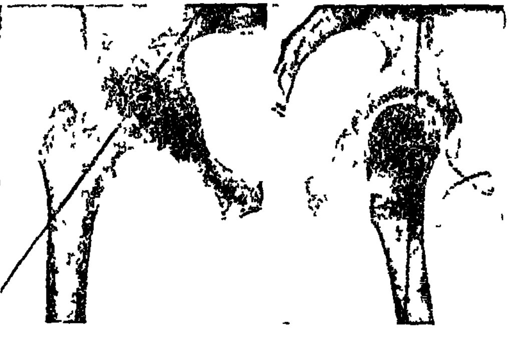

Fig 4—Suitably directed guide. (A) anteroposterior view, (B) lateral view

the patient without disturbance. The hip is held in the position of election throughout the operation.

An incision 6 in. long is made in the line of the femur beginning just above the lower border of the great trochanter. The deep fascia, vastus and periosteum are divided in the same line and the subtrochanteric region of the femur is cleared on its outer aspect with a rugine. The blade of the introducer is passed along the anterior surface of the femoral neck until the block comes into apposition with the shaft. A finger is inserted by the side of the blade and should feel this lying flat on the neck one fingers-breadth above the lower margin The introducer is held firmly in this position and a 23 cm. (9 in.) guide is passed through the middle hole of the block and drilled into the bone by an electric motor until the 15 cm. mark is flush with the outer surface of the instrument The guide hole being 3 cm long, there will now be 12 cm. embedded in bone provided the block fits the femur accurately. The introducer is withdrawn, and, if necessary, the guide is further adjusted to the 12 cm. mark. An anteroposterior film is taken for direction and the expanding scale is then calibrated from this in the manner described. Often the first guide is satisfactory, but if the direction is wrong the introducer is re-threaded and a second guide is inserted through one of the alternative guide holes. If a parallel, rather than a converging, guide is required, the "fracture" block of the original introducer can be used. The first guide is withdrawn and another film taken. From the film showing the selected guide (fig. 7), estimation is made with the scale of the length of nail required—usually about 14 cm.—due allowance being made for counter-sinking the head. The canalised trephine is now used to cut through the cortex; a few taps from a gouge are required to free the separated disk of bone. The appropriate nail is threaded over the guide and driven home in the usual manner until the head is fully countersunk (fig. 8). The guide is withdrawn. Anteroposterior and lateral films may be taken now or after the patient has returned to bed The wound is closed, with or without subfascial drainage as preferred, and firm dressings are applied.

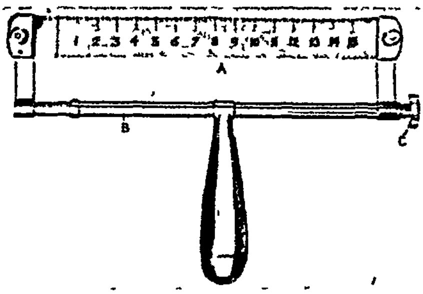

FIG 5—Expanding scale for making corrected measurements from X-ray films: (A) scale proper, made of rubber, (B) telescopic frame, (C) milled screw for extending the frame

Including radiography, the operation takes about 45 min. With the use of a portable developing box and rapid developer each film is available within 3 min. After operation suspension of the limb in a Thomas splint may assist nursing. We have allowed our patients to sit out of bed in three weeks and to stand in four.

COMMENTS

Broad Smith-Petersen nails of 15 mm diameter are favoured by some as less likely to break, but this should be a diminishing danger with improving methods of manufacture We have adhered to the standard diameter to minimise the danger of subsequent fracture of the femur at the level of insertion before consolidation has occurred. Even so, one of our patients who went upstairs without permission sustained such a fracture on the 44th day after operation. We think that this risk, which presumably is confined to the first three or four months after operation, might be overcome by the application of a firm, well-moulded walking plaster extending to the femoral condyles but leaving the patella free.

In addition to inserting the nail we have attempted to encourage bony ankylosis by drilling across the joint at various points The original "fracture" block of the introducer is threaded over the selected guide, and a second guide can thus be drilled parallel with the first and withdrawn. The block is then slightly rotated and the drilling repeated This procedure is continued until a ring of drill holes has been made round the original guide

Often other distances besides the proposed length of nail-track require estimation on the films, and the expanding scale has a correspondingly wider sphere of usefulness. It can be used also in the operation for nailing the femoral neck for fracture

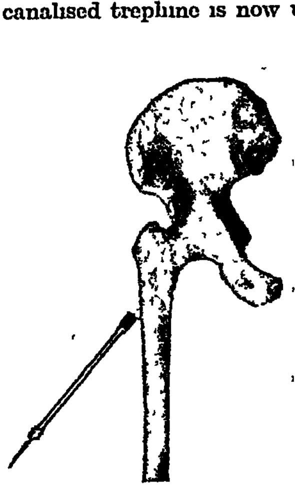

FIG 6—Canalised trephine threaded over guide-wire

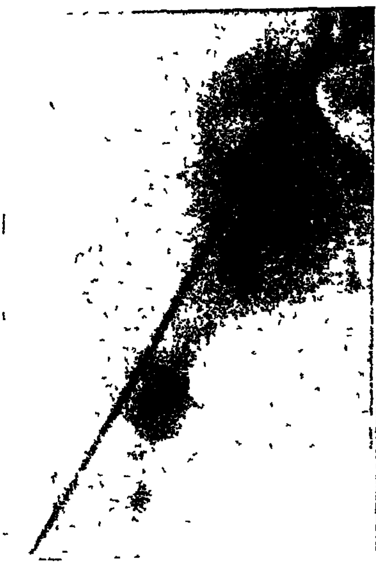

FIG 7—Guide selected at operation

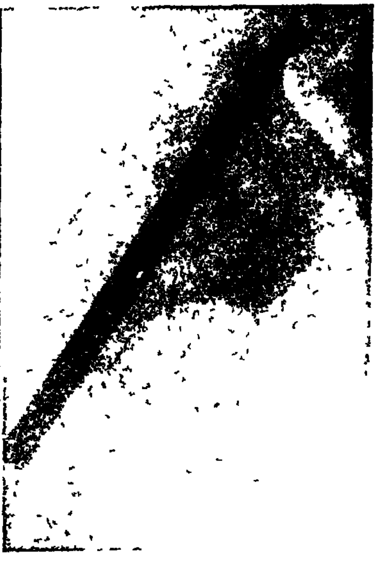

FIG 8—14 cm. nail in position.

OTTAWA CIVIC HOSPITAL

SUMMARY

A technique is described for arthrodesis of the hip by means of a canalised Smith Petersen nail introduced without exposing the joint

The operation is suitable for patients with unilateral osteo arthritis of the hip who are unfit for more extensive procedures

Three technical difficulties have been overcome by the use of special instruments (*a*) Accurate insertion of a guide by an adaptation of an introducer originally used in nailing the femoral neck for fracture (*b*) Estimation of the length of nail required from skiagrams by means of an expanding scale (*c*) Embedding the head of the nail permanently with the aid of a canalised trephine

The work was carried out at St Leonard's Hospital, London County Council, to the medical superintendent of which, Dr A D Morris, we are indebted for helpful coöperation We wish to thank also other members of the staff, especially Dr T P Crankshaw for photography and Mr T H McDowell for technical assistance The special instruments of correct pattern are obtainable from the Genito-Urinary Manufacturing Co, Devonshire Street, London, W 1, whose assistance, particularly that of Mr Schranz, we gladly acknowledge

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PRIMARY PERITONITIS IN SCARLET FEVER

TREATED WITH SODIUM SALT OF M & B 693

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ACUTE hæmolytic streptococcal peritonitis in which no focus in the abdominal cavity is demonstrable is a rare and very fatal condition The term "primary" rules out (1) cases arising from appendicitis, (2) extensions from a local process—e g, uterine sepsis, abscess, and osteomyelitis of the hip—and (3) infections from without, as, for example, in the case described by Taylor (1926), in which the infection (a green producing streptococcus) was probably secondary to an injection of antitoxin into the abdominal wall

The disease is essentially the same whether associated with scarlet fever or not, being probably always preceded by hæmolytic streptococcal septicæmia In several published cases described as complicating scarlet fever the abdominal symptoms preceded the rash (Kojis and McCabe 1933, Sabadini 1935) In these cases the scarlatinal syndrome may well have been a mere secondary toxic manifestation of the streptococcal septicæmia Both forms are a disease of children and young adults In the form not associated with scarlet fever, for example, Rabinowitz (1919) describes 8 cases in which the patients were aged from ten months to twenty one years In the form associated with scarlet fever the ages in the published cases range from seven months to thirty-two years

In 2500 cases of scarlet fever at the Willard Parker Hospital, from 1893 to 1899, Somerset (1900) did not see a case, nor did Weaver (1925) in 2595 cases of scarlet fever in Chicago between 1913 and 1922 McCollum and Blake (1903), however, saw 2 cases in Boston among 6000 cases of scarlet fever Kojis and McCabe (1933) describe 3 cases out of 5500 of scarlet fever at the Willard Parker Hospital between 1928 and 1932, in the same series no less than 42 cases were shown to have hæmolytic streptococcæmia, only one of which developed general peritonitis Dunham (1921) reviews 10 published cases and reports 1 case Platou (1924) reports 1 case and shows that 4 of the 11 published cases at that time occurred in the eruptive period and 7, so far as could be ascertained, in the desquamative period By 1933 Kojis and McCabe, in an excellent review, were able to collect 19 cases, and since then single cases have been reported by Sabadini (1935), Vučetić (1935), Bartone (1935), Erskine (1936), Frew (1936), and Gavrilă (1936)

Of these 25 cases occurring up to 1936 7 recovered, the fatality-rate thus being about 70 per cent

TREATMENT

The chief interest of treatment has hitherto been focused on the question whether laparotomy should be performed When the symptoms suggest any possibility of the condition being due to appendicitis or other primary lesion, the desirability of laparotomy, even in an extremely ill patient, will hardly be in doubt On the other hand, when there is no indication of a primary lesion, the surgeon may be deterred from operation by the grave condition of the patient, the absence of free fluid in the early stages, and the limitations of operation as a means of adequate drainage of the peritoneal cavity Kojis and McCabe (1933), however, point out that of the 6 recovered patients up to 1933 5 had external drainage of the abdominal cavity, and they accordingly recommend early laparotomy, even although a large number of patients that were operated on died

Vučetić (1935) describes a case in a girl of eight who, on the 21st day of scarlet fever, developed sudden acute abdominal symptoms, pain, vomiting and board like rigidity Conservative treatment was adopted, and four weeks later pus burst through the umbilicus Complete recovery eventually took place This patient was subsequently observed for many years, during which she grew up and became the mother of two children Nevertheless, Vučetić favours laparotomy and thinks it should be done early

The whole question of treatment of acute primary peritonitis has been revolutionised by the introduction of chemotherapy Both sulphanilamide and M & B 693 have such a potent action on hæmolytic streptococci in the blood stream, in the meninges, and, as the following case record suggests, for M & B 693 at least, in the peritoneum, that it may be considered justifiable and even desirable now to refrain from laparotomy in view of the risks in desperately ill patients This consideration applies only to those cases in which there is no evidence of a primary focus in the abdomen

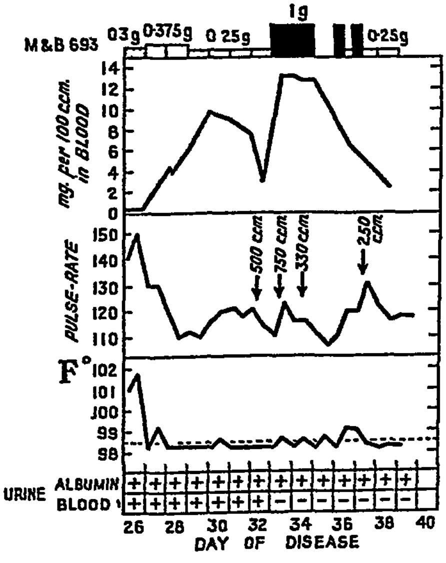
The case recorded below is of interest not only from this point of view but also because of the new form of the drug employed in the treatment—namely, the soluble sodium salt of M & B 693, which can be given by intramuscular injection This preparation was supplied by the makers in 2 c cm ampoules representing a 25 per cent solution of the sodium salt—i e, each 2 c cm ampoule represented the equivalent of 0 5 gramme of the drug It is a clear solution, is very rapidly absorbed, and hence must be given in smaller doses than those appropriate for the drug given in tablet form by mouth The makers have suggested on the basis of animal experiments, that the solution might be considered to be biologically four times as potent as the drug in tablet form—that is each 2 c cm ampoule containing 0 5 g of the drug was biologically equivalent, when injected intramuscularly, to 2 g Clinical experience in the following case, as well as in cases of meningococcal meningitis not yet published, suggest so far that the solution has a biological potency about twice that of the drug in tablet form * The solution has its greatest value in cases such as the following, in which continued vomiting renders oral administration impossible It may also be of value for initial administration of the drug to obtain a rapid effect Otherwise it has no advantage over the tablet form given by mouth A disadvantage is its irritant effect on the skin at the site of injection Some of the injections are followed by small superficial necrotic lesions of the dermis This is understood to be due to the high alkalinity of the solution (pH 11·5). For this reason continuously repeated injections of the sodium salt are undesirable As soon as possible the drug should be given by mouth The injections themselves are apparently painless.

CASE-RECORD

A male, aged 8, was admitted to the Park Hospital on Dec. 1, 1938, on the third day of a sharp attack of scarlet fever and with a septic abrasion of his right knee. His temperature was 102° F., his pulse-rate 130, and his respiration-rate 24. He had a well-marked punctate erythematous rash, congested fauces with exudate on both tonsils, and bilateral cervical adenitis.

Since he was admitted to a ward in which chemotherapy was being tried out, he had no antitoxin treatment but received sulphanilamide in six-hourly doses, a total of 8 g. being given during three days from admission. This drug was tolerated badly; cyanosis appeared on Dec. 2 accompanied by a greyish pallor, and there were mental confusion, rambling talk, and disorientation of ideas on the 3rd. Administration of the drug was stopped at this point.

The temperature did not fall to normal till the 7th, and it rose again to 101° F. on the 10th, apparently associated with a left secondary cervical adenitis and cellulitis of the left infra-orbital region. The temperature was normal again on the 18th On the 19th albuminuria was noted. By the 21st he had definite signs of acute nephritis, with pyrexia and vomiting and much decreased urinary output.



A ☐
B ☐
C ■
Chart of a case of peritonitis complicating scarlet fever in a boy aged 8 years Arrows indicate peritoneal fluid aspirated. A = intramuscular injection of 20 per cent. suspension of M. & B 693. B = intramuscular injection of sodium solution of M. & B. 693 C = tablets of M. & B 693 by mouth.

On the 22nd he complained of abdominal tenderness, most marked on the *left* side; there was no real rigidity. On the 23rd the abdominal tenderness had increased in the left upper abdomen, and there was tenderness in both loins, especially the left. Rigidity was not pronounced. His temperature was 101 2° F. and his pulse-rate 120. Examination per rectum showed nothing abnormal. He was vomiting everything on this day. A surgeon was consulted and temporising was advised.

On the 24th he was exceedingly ill when seen by the surgeon, Mr. N. Eckhoff, at 11 A.M. There was now much abdominal distension, general tenderness most pronounced on the left side, and board-like rigidity, with signs of fluid in the peritoneal cavity. The tongue was dry; the temperature was 101° F. and the pulse-rate 140; there was nausea and a tendency to vomit bile. Peritoneal exploration with a needle yielded a thin turbid fluid containing hæmolytic streptococcus of Griffith type IV. Blood-culture on this day yielded the same streptococcus (type IV) In view of his desperate condition and for other reasons it was decided not to operate. He was treated with intramuscular injections of 1 5 c cm. of the 20 per cent. suspension of M. & B. 693 in oil four-hourly from 11 A M, for he was unable to take any drug by mouth.

On the 25th at 10 A M the temperature had fallen to normal, although it rose in the evening to 99° F. The pulse-rate was still 130. He had vomited only once in the preceding twenty-four hours and had taken 46 oz. of fluids by mouth. The tongue was more moist; he was rather less pinched and anxious in appearance; and stools were frequent and green. From 11 A M on the 25th intramuscular injections of 1 5 c.cm. of the 25 per cent sodium solution of the drug were given four-hourly.

On the 26th the temperature was normal all day, with a definite general improvement and a decrease of pulse-rate. The abdomen was still tense, tumid, and tender, and there was a local tender swelling over the left tunica vaginalis. The urine contained much blood and albuminuria, and the output was low. On the 27th the improvement was maintained, and the injections of sodium solution of M. & B. 693 were reduced to 1 c.cm. four-hourly, and during the next three days to 1 c.cm. six-hourly.

Dec. 29. improvement maintained; fluid in peritoneal cavity increased; bilateral œdema of scrotum; slight cyanosis of finger nails; Dec 30: 500 c cm of thin purulent fluid was aspirated from the peritoneal cavity; no organisms were seen in smears, and the cells were largely disintegrated; the fluid grew one colony of hæmolytic streptococcus from 4 c.cm ; Dec. 31: 750 c.cm. of peritoneal fluid was aspirated; this proved to be sterile. M. & B. 693 was now given in tablet form orally, 6 g. daily (1 g. four-hourly)

Jan 1, 1939 · some pleural effusion was discovered at both bases; 330 c cm of greenish peritoneal fluid was aspirated; this was sterile; Jan. 2 · patient vomited twice after tablets; slight cyanosis; drug discontinued for twenty-four hours, then tablets recommenced 1 g four-hourly, with substitution of 1 c cm of the sodium solution injected intramuscularly on two occasions when he was vomiting. Abdomen not now tender; swelling much reduced.

Jan. 4: abdominal fluid increased again and some pyrexia; œdema of scrotum and of feet; urine contained much albumin; output 27 oz in twenty-four hours; some anæmia (hæmoglobin 67 per cent.); the sodium solution of the drug was given, 1 c.cm four-hourly, owing to a tendency to vomit, Jan 6 · aspiration was attempted in the *left* hypochondrium, but no fluid was obtained; 250 c cm. was aspirated from the right hypochondrium (sterile); Jan. 6: drug discontinued; Jan. 7 · improved; radiogram shows pleural thickening and fluid in left lower and middle zones.

Jan. 11: 180 c cm of sterile peritoneal fluid aspirated; Jan. 17: 75 c.cm. of clear amber fluid (sterile) aspirated from left pleural base. *Child* greatly improved but has tachycardia and is very anæmic, hæmoglobin 48 per cent Iron tonic given for some days, liver extract now added, Jan 28 child still very pale, hæmoglobin now only 47 per cent, red blood corpuscles 2,430,000 Blood transfusion 200 c cm.

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* The sodium solution is now issued in a strength of 33⅓ per cent in 3 c cm ampoules each containing 1 gramme of the sodium salt of the drug The makers now suggest that for practical purposes the injectable preparation is *twice* as active as when the drug is given by mouth

Jan 31 right pleura and abdominal cavity explored, no fluid obtained from either, trace of albuminuria, no œdema, general condition much improved, hæmoglobin now 54 per cent, Feb 2 blood transfusion 300 c cm

Feb 15 general condition now good, weight rising steadily, abdomen slightly full but otherwise normal, no œdema, very faint trace of albuminuria, hæmoglobin now 70 per cent and red cells 3,000,000, Feb 24 steady improvement maintained, child beginning to be out of bed, March 1 urine clear, child getting up, March 22 up and well, red cells 4,200,000, hæmoglobin 92 per cent, faint trace of albuminuria still present, abdomen slightly full but otherwise normal on palpation, body-weight 4 st 8 lb

The chart shows the varying concentration of M & B 693 in the blood during the period of administration The 20 per cent suspension in oil given intramuscularly during the first twenty four hours produced mere traces in the blood The sodium solution given intramuscularly, on the other hand, produced a rapid rise to 4 mg per 100 c cm in twenty four hours and 0 8 mg in seventy two hours, and there was a rapid fall in blood level when the dosage was decreased When, after this, the tablets were given by mouth, the blood level again increased rapidly and as rapidly fell away when the drug was discontinued for twenty four hours and subsequently when the dosage was reduced The blood level produced by intramuscular injection of the sodium salt was about twice as high as would have been expected if a similar amount of the drug had been given by mouth

SUMMARY

A case is described of hæmolytic streptococcal septicæmia and general peritonitis occurring on the twenty sixth day of scarlet fever and associated with other complications of the disease—namely, infra-orbital cellulitis, cervical adenitis, and nephritis The patient had not had the benefit of antitoxin treatment in the initial stage of his scarlet fever but had been treated by sulphanilamide, which was badly tolerated For the peritonitis, since there was no evidence of an abdominal focus, operative treatment was not adopted Chemotherapy, at first with M & B 693 by injection of the 20 per cent, suspension of the drug, later by injection of the sodium salt, and ultimately by oral administration, apparently brought about a rapid sterilisation of the pus in the abdominal cavity There was subsequently a considerable accumulation of peritoneal fluid, which was removed by repeated aspirations There was also an associated bilateral pleural effusion The patient suffered in convalescence from a profound secondary anæmia, which did not improve under iron and liver therapy but rapidly improved after two blood transfusions He made a good recovery The advantage of injections of the sodium salt of M & B 693 in the early treatment of this type of case is emphasised

I have to thank Dr J E McCartney, of the Southern Group Laboratory, for the pathological reports and Dr E N Allott, of Lewisham Hospital Group Laboratory, for the biochemical reports I have also to acknowledge the kindness of Messrs May and Baker Ltd in supplying me with the sodium solution and tablets of M & B 693

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CLINICAL AND LABORATORY NOTES

LYMPHOPATHIA VENEREUM TREATED WITH M & B 693

By K Vigors Earle, M D Lond, B Chir Camb
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I AM recording the following two cases of lymphopathia venereum (lymphogranuloma inguinale) successfully treated with M & B 693 (2 sulphanilyl amino pyridine) in the hope that others, who have the opportunity of seeing and treating large numbers of cases of this disease, may be prompted to give this drug an extensive trial Both cases were in West Indians, of the negro race, and in both the disease was in the bubo or secondary stage without fistula formation

CASE RECORDS

CASE 1 —Male, aged 22 labourer The patient first noticed stiffness and pain in both groins on Dec 28, 1938 He had previously had frequent coitus with various partners Next the inguinal lymphatic glands of both sides began to swell and continued to increase in size until the time he consulted me on Jan 6 He was a well built man, but looked definitely ill Temperature 99 2° F, pulse-rate 81 The skin was dry and dull and the tongue furred Nothing abnormal was noted in the gastro-intestinal, pulmonary, cardiovascular or central nervous systems The genitalia were large and well-formed, and on retraction of the prepuce two shallow ulcers about 3 mm in diameter were seen on the left side of its inner surface In each groin was a bubo consisting of enlarged inguinal lymphatic glands of the upper internal group, these were painful on palpation, especially on the left side The Frei test was positive; the Reenstierna test and Wassermann reaction were negative Scrapings from the preputial sores showed no *Treponema pallidum* While awaiting the results of these tests, potassium iodide, gr 10, thrice daily, was given as a placebo

Treatment and progress—On Jan 10 the patient complained of severe pain in each bubo Both buboes had now enlarged to about 3 cm in diameter. That on the right was soft, fluctuant and adherent to the overlying skin, which was sodden and discoloured from applications of *rachat* (split leaves of a prickly pear, used in Trinidad as a poultice) The bubo on the left was aspirated, 1 c cm of pus being withdrawn This showed no organisms in a film or on subsequent culture The patient was given six 0 5 g tablets of M & B 693 daily Further poulticing of the buboes was forbidden On the 18th the buboes were smaller and less painful and the patient said he felt better On the 24th the patient complained of epigastric pain and discomfort Both buboes were much smaller, non fluctuant and painless on palpation He had now had M & B 693 for eight days, and the dosage was reduced to four tablets daily On the 30th the patient reported fit for work, appearing and feeling well Both buboes were reduced to about 1 cm in diameter, were painless and non-adherent to skin and deep structures

The M. & B. 693 was omitted. On Feb. 7 there was no sign of the former condition.

CASE 2.—Male, aged 23, labourer. Frequent coitus had been indulged in up to Jan. 26, 1939, when he noticed a painful swelling in each groin and felt ill. The patient was a well-built muscular subject but when examined on Jan 31 he looked unwell. Temperature 100° F., pulse-rate 92. The skin was dry and the tongue furred. Nothing abnormal was found in the gastro-intestinal, pulmonary, cardiovascular or central nervous systems. On the dorsum penis at the inner surface of the prepuce, close to the corona, were two small sores 2 mm. in diameter. In the right groin was a bubo measuring 9 4 cm. in its long axis, which was parallel to the inguinal ligament; in the left groin was a similar bubo, the long axis of which measured 6 4 cm Both buboes were hard, non-fluctuant, painful on palpation, and unattached to the skin. The Frei test was positive; the Reenstiema test and Wassermann reaction were negative. Serum obtained from the sores contained no *Tr. pallidum.*

Progress and treatment.—The patient was given M. & B. 693 six tablets daily. On Feb. 3 he felt and looked much better but complained of epigastric pain and discomfort since taking M. & B 693. The bubo on the right now measured 4·6 cm. in its long axis; that on the left 3·8 cm. Pain was entirely absent. On the 7th the buboes were each the size of a filbert. He had then taken six tablets of M. & B. 693 for six days Four tablets were given daily for a further three days. On the 11th the buboes had disappeared and the man returned to work.

DISCUSSION

The most popular forms of present-day treatment of lymphopathia venereum all have very definite disadvantages when applied to uneducated communities with limited hospital accommodation. Protein-shock therapy requires hospitalisation for its administration, and injections of salts of antimony or gold or the specific vaccine are often painful and are heartily disliked by patients, who, moreover, may be unable to attend regularly because of distance from the clinic, tropical rains and the like. If, then, a satisfactory method of oral treatment can be devised the practitioner in the tropics has a valuable weapon in his hands.

The two cases described here were admittedly seen at the optimum therapeutic stage, for in neither had fistula-formation or late complications set in. I regard the epigastric discomfort and pain as a mild toxic effect of M. & B 693, since I have seen it produced by the drug in other conditions (gonorrhœa, staphylococcal infections and pneumonia) It passes off when the drug is withdrawn or even perhaps when the dosage is reduced.

SUMMARY

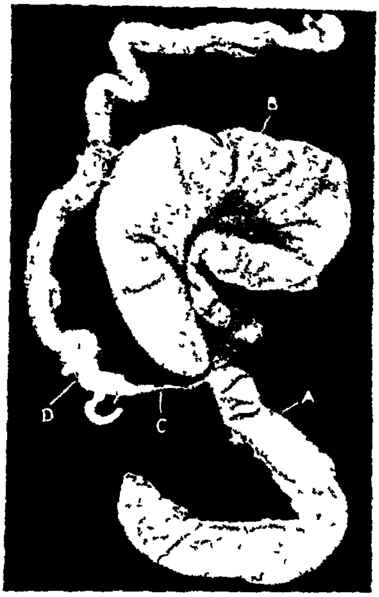
Two cases of lymphopathia venereum (lymphogranuloma inguinale) were successfully treated with M. & B 693 This treatment has the advantage of requiring no hospitalisation and no painful injections.

INTESTINAL ATRESIA WITH TORSION OF MECKEL'S DIVERTICULUM

BY FRANK FORTY, M B. Lond., F.R C S
SURGEON TO REDHILL COUNTY HOSPITAL, EDGWARE

INTESTINAL obstruction occurring in the newborn from congenital stenosis and atresia of the intestine has given rise to various conjectures as to the precise origin of these anomalies From the ætiological standpoint two main varieties need to be distinguished In the first the continuity of the lumen is interrupted at one or more points by septa covered on both sides by mucous membrane—the so called septate ileum In the second the bowel comes to an abrupt end and begins again at a lower level, the two portions being joined by an impervious fibrous cord of varying length, as in the case reported here

The illuminating observation made by Bland-Sutton in 1891 that obstructions of this type are limited to regions of the intestine which are the site of "embryological events"—i.e., the places of origin of the liver bud and of the vitello-intestinal duct respectively—clearly points to a disturbance of the normal process of involution as being the true explanation of their occurrence. Other suggested causes of ileal atresia, such as antenatal strangulation by the umbilical ring and volvulus of the ileum, could not operate in the case of the duodenum where similar interruption of the lumen by a fibrous cord is seen.



Post-mortem specimen, showing diverticulum restored to its original position. A=Lower end of ileum, showing some dilatation B=Meckel's diverticulum. Torsion had taken place at its attachment to the ileum. C=Thin fibrous cord representing the ileum between the origin of Meckel's diverticulum and the cæcum. D=Cæcum, appendix and colon, normally formed but small and atrophic

In the case here described the persistence of Meckel's diverticulum, together with atresia of the ileum in the same child, acquires a special significance as corroborative evidence that the normal embryological processes associated with the closing of the vitello-intestinal duct were at fault and were responsible for the obliteration of the intestinal lumen at this point. A similar case was reported by Carwardine in 1897, but the association seems to be very rare.

CASE-RECORD

A male child, weighing 6 lb., was born at Redhill County Hospital, Edgware, on Sept. 5, 1938, after a normal delivery. No external abnormalities were present, and meconium was passed normally. Vomiting started soon after birth and became persistent. The vomited fluid was at first green and later yellow. Gastric and rectal lavage were given without any improvement. On the 8th radiography of the stomach after a barium feed showed the position and outline of the stomach to be normal but no barium was seen to pass into the intestine. I saw the child on the same day and found him somewhat dehydrated The abdomen was very distended and tympanitic. No mass was felt The rectum admitted a finger without difficulty and nothing abnormal could be felt there.

On the evening of the 8th I performed a laparotomy under ether anæsthesia. The abdomen was opened by a right paramedian incision and was found to be nearly filled by a dark plum-coloured loop of bowel This proved to be tightly twisted on itself several times After undoing the volvulus the affected bowel was recognised as a Meckel's diverticulum with a blind and free distal end The small intestine proximal to the point of origin of the diverticulum was much distended while beyond this it was represented by only a thin fibrous cord The diverticulum was excised and the divided end of the small intestine was implanted into the abdominal wall as an enterostomy The child stood the immediate effects of the operation well but died about 24 hours later

On *post-mortem examination* the body was that of a normally formed infant except for the terminal portion of the ileum, which was represented by a thin fibrous cord joining the site of origin of the large Meckel's diverticulum to the cæcum (see figure) The appendix and large intestine were normally formed but *small and contracted*

The results of the treatment of intestinal atresias have hitherto been extremely discouraging According to Morley's (1921) survey of the literature there were no recorded cases of an infant surviving operation for this condition for more than a few days Nevertheless, two considerations seem to justify an exploratory laparotomy in all cases of intestinal obstruction in the newborn where the general condition of the infant permits it First, the inevitably fatal outcome of intestinal atresia in the absence of surgical intervention, and secondly, the impossibility of making an exact preoperative diagnosis of the precise cause of the obstruction, with the consequent possibility of finding a condition more easily amenable to surgical treatment

I am indebted to Dr J N Deacon, medical superintendent of Redhill County Hospital, for permission to publish this case, and to Dr Hamilton Patterson for his careful post-mortem examination

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" HYPO-HCl " TREATMENT OF SCABIES

By W S Parker, M B Manc
SURGEON LIEUTENANT, ROYAL NAVY

The usual treatment of scabies by means of sulphur ointment and baths has other disadvantages besides that of inconvenience, especially when a number of cases have to be treated simultaneously In March of last year 8 cases of scabies were detected in a naval mess where spread of infection was inevitable under the conditions of close contact found in a small warship The patients were isolated and their kit fumigated and it was decided to try the " Hypo HCl " method of treatment According to Fitch (1938) this method was employed in at least one British field ambulance during the late war, but it was later rediscovered in Germany and is being used satisfactorily by Huber (1938) in Budapest

It consists of painting the whole of the patient's skin with a 25 per cent aqueous solution of sodium thiosulphate (the photographer's " hypo "), allowing this to dry and then painting with 5 per cent hydrochloric acid This is repeated, so that a single treatment consists of two alternate applications of hypo and acid The result is a very fine deposit of sulphur on the skin without a tedious and somewhat unpleasant inunction A full course consists of two treatments on each of three successive days All the cases cleared up on one course without incident One further case occurred some months later and responded to the same treatment

This method does not seem to be so widely known as it deserves It is entirely free from discomfort or risk, it can be carried out anywhere and requires no special skill, its cost is low, and finally it is particularly convenient in cases where bath facilities are conspicuous by their absence

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MEDICAL SOCIETIES

OPHTHALMOLOGICAL CONGRESSES IN LONDON

Ophthalmologists assembled in London for 3 congresses last week, all held at the house of the Royal Society of Medicine at 1, Wimpole Street, W 1 The annual congress of the

Ophthalmological Society of the United Kingdom

took place on April 20, 21 and 22 The president, Mr T Harrison Butler (Birmingham), gave an address on the *anterior capsule* He showed that clearly defined zones can be recognised and that the zonular lamella, which is probably of different origin from that of the hyaline capsule, has characteristic lesions of its own The epithelial cells were probably the oldest part of the lens and have a purely nutritional *function* The address was profusely illustrated with drawings from clinical cases

SOME COMMUNICATIONS

Dr W J B Riddell (Glasgow), speaking on *multiple factors in hereditary eye diseases*, pointed out that the association otherwise than accidental of two inherited conditions gave identifiable syndromes and opened the theoretical possibility of constructing human chromosome maps He discussed in detail the association of colour blindness and hæmophilia and described a pedigree containing colour blindness, blue sclerotics, deafness and fragilitas ossium

In a paper by Dr M Klein (Budapest), read in his absence by Mr F Ridley (London), a survey of different methods of *wound closure after cataract extraction* was given on the basis of 600 cases Conjunctival flaps, Kuhnt's conjunctival apron and the Liegard corneal suture were employed

Mr F A Juler (London), in a paper on *hypotony after sclero corneal trephining*, suggested a readjustment of the conjunctiva for the hole or a fresh flap rotated from the temporal side as suitable measures for this unpleasant complication which showed itself by choroidal detachment, pupillary exudate and lens opacity

Prof H Lauber (Warsaw), discussing *pallor of the disk*, observed that three different factors may be involved anæmia, hypæmia and ischæmia, the latter being the most important and the most often met The disappearance of nerve fibres and their substitution by glial tissue, as also the disappearance of capillaries, were not insignificant In tabes pallor was largely due to ischæmia and the normal pink colour of the disk might be restored when the disproportion between the normal intra ocular tension and the diminished arterial pressure in the vessels is overcome It was, therefore, important to recognise that pallor of the disk is not synonymous with atrophy of nerve-fibres.

Prof Lauber also contributed a paper on *combined operations for glaucoma*, saying that in refractory cases cyclodialysis combined with iridectomy had definite advantages, the cyclodialysis being done from the iridectomy incision or independently. Posterior sclerotomy was also a useful procedure in some cases prior to iridectomy.

Dr **Harald Gjessing** (Oslo) in a paper on *Holth's iridencleisis antiglaucomatosa* gave an analysis of the results of 198 operations followed up from 6 to 280 months. In 72 per cent. the intra-ocular tension was normalised without pilocarpine and in a further 18 per cent. with pilocarpine Central vision had not declined in 80 per cent. of the cases and the field had not been reduced in 86 per cent. He held that if after 36 months no deterioration had occurred a permanent cure could be assumed. Technically it was essential to combine the operation with meridional iridotomy.

In a paper on *bipolar electrolysis in the treatment of detachment of the retina*, Dr W. J. W **Ferguson** (Sheffield) described the method elaborated by von Szily. Ease of access, absence of adhesions, accurate estimation of dosage, relative absence of postoperative reaction and pain and mildness of scarring were some of the features which recommended this procedure

The *treatment of increased ocular tension with diathermy in glaucoma* was the subject of a paper by Mr J P. F Lloyd (Cheltenham), who pointed out that this treatment was not new, but was none the less most effective In cases of acute and subacute glaucoma it was often successful as the sole measure and at least made it possible to defer operation till a more quiescent stage had been reached

Dr. T. J. **Phillips** (London) stressed the value of *short-wave diathermy in ophthalmology* and indicated a series of conditions in which it could be used

Mr J **Minton** (London), in a paper on the *one-eyed worker in industry*, pointed out that those who had had amblyopic eyes from childhood were sometimes but little handicapped and those who lost an eye in adult life often adjusted themselves and obtained reasonable perception of depth The standards adopted by many factories required too high a binocular visual acuity and standards on the vocational need of good vision were desirable.

Mr G. T. W. **Cashell** (Reading) and Dr S K **Kon**, in a paper describing *studies in lactose and galactose cataracts in rats*, drew attention to the work of Mitchell, who had obtained nutritional cataract in the rat by high concentrations of lactose and galactose in the diet In extending these experiments they found that when the lactose and galactose were administered in different vehicles the results were rather different Diets containing less protein were more toxic. Fresh liquid skim milk was more toxic than the dried product, and a greater liquid intake with a dried milk powder was also more toxic. Regression of the cataract occurred with the discontinuation of the toxic agent and high proportions of protein tended to act as a protective

Mr. E. **Wolff** (London) discussed some aspects of the *blood-supply of the optic nerve and retina*. He showed that the papillo-macular bundle is relatively poorly supplied with blood. The arteria centralis itself until its bifurcation had probably nothing to do with the nutrition of the nerve

Mr. **Lindsay Rea** (London). speaking on the further uses of the *curved retrobulbar needle*, described the technique of injecting analgesic agents into Tenon's capsule, and thus obtaining a direct effect on ciliary nerves The anæsthesia was complete and therefore general anæsthesia could be avoided more often than when other methods were used

Mr. J. **Adamson** and Mr. E. F. **Fincham** (London), in describing the *effect of lenses and convergence upon the state of accommodation of the eye*, showed that by the use of transparent plane mirror and the "coincidence optometer" it could be determined that accommodation remained unaltered within certain limits, with the maintenance of the best vision, whilst the vergence of the light entering the eye was modified by positive and negative lenses Changes in convergence also influenced the state of accommodation; the accommodation in binocular vision differed from the monocular state by amounts dependent on the presence and magnitude of horizontal muscle imbalance.

Mr. W O. **Gibson Taylor** (Glasgow), speaking on the *effect of enucleation of one eye on the growth of the face*, gave an analysis of 50 cases investigated at intervals of from two to ten years following removal of an eye in childhood. External measurements, confirmed by X-ray examination, showed that enucleation before the age of 7 years resulted in an aberration of development in both size and shape of the orbit This abnormal development affected in some part the surrounding air sinuses.

Mr. L P. **Jameson Evans** (Birmingham), in a paper on *tobacco amblyopia*, reviewed the clinical aspects and pathology of the affection and discussed the significance of the water content of the different types of tobacco in relation to their toxicity, and the rôle of the liver in the elimination of the toxic agent. Stressing the importance of vasoconstriction in this affection he brought forward evidence of the value of the use of antispasmodics

The Bowman lecture was delivered by Prof H. **Weve** (Utrecht) on

DIATHERMY IN OPHTHALMIC PRACTICE

After indicating the historical and physical basis of the use of diathermy he stressed its value in facilitating accurate dosage and strict localisation of effects. It had the further advantages of leaving soft and flexible scars, stopping hæmorrhage, having an antiseptic action, and, above all, enabling an approach to the interior of the eye to be made without opening the globe He illustrated clinical applications of diathermy in ophthalmology by case reports with drawings showing the effect of diathermy in a wide range of affections including epibulbar sarcomata and carcinomata, contracted sockets, conjunctivitis, glaucoma and intra-ocular tumours, including hæmangiomata. Another field where it found application was the letting-out of fluid in cases of vitreous opacities in chronic inflammation and intra-ocular hæmorrhages; in intra-ocular tuberculosis too it had found its uses. The greatest success was, however, the treatment of detachment of the retina; in 1938 he obtained 81 per cent of successful results in 141 cases The technique employed at Utrecht was illustrated by a colour film

The main discussion of the congress was devoted to the

PROBLEMS OF REFRACTION

Mr. C B. **Goulden** (London) opened with a restatement of general principles, emphasising that the taking of visual acuity involves the determination of the light sense, the form sense for grating, contour and letters, and the colour sense In the discussion on the criteria necessary for distant types and near types he recalled the principles underlying Snellen's test types, which were a direct development of Hooke's observations in 1645 of the minimum angle of visual acuity. In speaking of retinoscopy he pointed out the advantages of the diaphragm lamp of Gullstrand on the slit-lamp plan and of a plane transparent mirror Other aspects discussed were the use of test lenses, trial frames, the measurement of the near point and of muscle balance

Mr A H Levy (London) followed with an exposition of methods of estimation—refinements additional to the minimum laid down by Mr Goulden He spoke of the principles underlying the use of the keratometer for the measurement of the refractive power of the anterior surface of the cornea, of retractionometers for the estimation of the total refraction of the eye, of the duochrome test and astigmatic fans The clinical aspects were discussed by Mr R Affleck Greeves (London), who indicated various pitfalls, stressing in particular the difficulties in the correction of presbyopia The general discussion was opened by the President who laid stress on the problem of spasm of accommodation Mr W H McMullen (London) emphasised the importance of precise fitting of lenses Dr R Onfray (Paris), speaking for Prof Terrien and himself, strongly commended the use of the diploscope as a routine procedure, whilst Dr Victor Purvis (London) and Mr J P F Lloyd (Cheltenham) spoke of the value of crossed cylinders Wing Commander P C Livingston (London) drew attention to the importance of leaving alone high errors of muscle balance when the patients did not experience any discomfort and discussed the difficulties and advantages of correcting troublesome lower errors He showed a test type adapted for determining visual acuity in children Dr Basil Graves (London) deprecated excessive activity in correcting errors of refraction, particularly of the low variety Mr Thomson Henderson (Nottingham), in supporting this view, emphasised the constitutional factor in discomfort which is generally ascribed to refractive errors

During the congress Dr A J Bedell (Albany, N Y) demonstrated colour photographs of fundus lesions, dealing in particular with the fundus in diabetes, and Mr H B Stallard (London) showed a cinematograph film of ophthalmic operations

International Association for Prevention of Blindness

This association met on April 19, the session being devoted to a discussion on

OPHTHALMIA NEONATORUM

With the president, Dr P Bailliart (Paris), in the chair, Dr A H H Sinclair (Edinburgh) spoke of the disease in Great Britain The incidence per thousand live births in Scotland ranged between 15 5 per cent and 19 2 per cent in the years 1933 to 1937, while in England and Wales the incidence was between 7 0 per cent and 8 3 per cent He described the administrative measures for its prevention in different parts of Scotland and held that 1 per cent silver nitrate was still the most effective prophylactic, though much might be hoped in the future from sulphanilamide and its derivatives Prof A von Szily (Münster) discussed the position in Germany, emphasising the great changes that had taken place since Credé first introduced his prophylactic method The Credé method was, however, not an absolute guarantee of safety, which could only be obtained by eliminating the source of infection The treatment of maternal gonorrhœa was, therefore, the first line of defence, the second line being insistence that midwives carried out the Credé method scrupulously Compulsory notification of gonococcal ophthalmia was essential to ensure early treatment Dr R P Wilson (Cairo) discussed the puzzling rarity of ophthalmia neonatorum in Egypt, where gonorrhœa was not uncommon Dr C Berens (New York) reported on the decline of the affection in the United States since the introduction of the Credé method and gave an account of the present administrative procedures He stressed the need for a prophylactic agent other than silver nitrate Prof F Terrien (Paris) spoke of cleanliness as the first line of defence and reported that in France few obstetricians used 2 per cent silver nitrate, the concentration commonly used being 1 per cent or 0 75 per cent The omission of any prophylactic method he regarded as a breach of duty as serious as abstention from aseptic measure before operation Mr J D M Cardell (London) emphasised the importance of a freshly made solution of silver nitrate, as evaporation and decomposition by light were dangerous factors Silver acetate (1 per cent) had the advantage that it could not become more concentrated owing to the insolubility of the salt, should it decompose the acetic acid set free was less irritating than nitric acid Prof L Maggiore (Genoa), in relating Italian experiences, reported the use of Protargol and Argyrol as a substitute for silver nitrate, it was important to have standard solutions Where prophylactic remedies are given out to midwives the agent should be prepared and distributed under state control Prof A Vasquez-Barrière (Montevideo) in giving the experiences of Argentine, reported that in South American republics ophthalmia neonatorum constitutes between 25 per cent and 48 per cent of all causes of blindness Active administrative measures were now being legally enforced to overcome this great toll on sight

A film on industrial eye accidents was demonstrated by Mr J Minton (London)

International Organisation against Trachoma

This congress met in the evening of April 21 In his presidential address, Mr A F MacCallan (London) dealt, among other matters, with the current views on the virus origin of trachoma He doubted the rôle of the louse as a carrier and was sceptical of the value of sulphanilamide in the treatment of the affection He emphasised the persistence of foci of infection in the tarsus in apparently healed cases A symposium on the incidence and clinical type of trachoma met with in Europe and North and South America—that is, in countries which are commonly considered to be non trachomatous—was opened by Dr F J Lavery (Dublin), who reported that in Ireland though the disease was not widespread it was endemic and still constituted a major problem In six orphanages that he had visited 66 out of 319 children were affected, 41 coming from one institution In 913 school children he had found 5 affected He estimated trachoma as being responsible for about 12 per cent of the total blindness in Ireland Dr Harry Gradle (Chicago) estimated the number of affected persons in the United States at 33,000 Trachoma was mainly seen in the indigenous Indian population, amongst illegal emigrants coming from Asia and Mexico, and previously also in Russian-Polish immigrants It was endemic along the river banks but sporadic cases were seen throughout the country Prof W Rohrschneider (Königsberg) reported that in Germany trachoma was chiefly confined to the eastern frontier, but sporadic cases, mainly in the non-native population, were seen elsewhere In his experience there was no evidence for the view that the louse was the carrier of the virus; trachoma and the louse were the common factors of a low standard of hygiene Mr. ARNOLD SORSBY (London), reporting on the direct information available from Glasgow and the indirect information from London, as also on the evidence from blind certification, showed that trachoma was a progressively diminishing problem in Great Britain. Contrasting the administrative measures taken in Glasgow and in London, he recalled successess obtained by other measures elsewhere and emphasised the ease with which trachoma is overcome by systematic effort of almost any kind. He could not support the current view that trachoma in this country always runs a mild course.

A discussion on the treatment of trachoma by sulphanilamide and its congeners, opened by Dr. HARRY GRADLE, who spoke highly of this mode of treatment, concluded the meeting

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

AT a meeting of this society held in London on April 13, with Dr. H. C. SQUIRES in the chair, a paper on

Escape Into Activities

was read by Dr. A SANDISON. In animals, he said, activity is primarily concerned with the necessities of self and race preservation, supplemented by the exercise necessary for health, and beyond these needs the animal does not indulge in excess of activity. In man the natural causes of activity are fundamentally the same but extend into wider spheres of self-fulfilment and mental creation. In so far as man's activity can be related to such objects it is normal; otherwise it needs further explanation. It is, however, difficult to define a normal range for man's activities since individuals vary widely in their capacity and circumstances. A quantitative standard is perhaps a better guide than a qualitative one When activity becomes activities, when "Doing is activity; he will still be doing," common sense begins to criticise and inquire. The proper spacing of rest periods is a function of life and when activities are pursued in a way that hinders adequate rest and repose we can suspect abnormal circumstances

The causes of activity are stimuli; successful living consists in sorting out the stimuli and dealing with them according to their importance When this selection of stimuli becomes uncoördinated we lose balance, and our engine is apt to race or stall. Excess of activities may often be a reasonable response to temporary emergencies, and in war, for example, there may be no limit but capacity as the correct response The semi-educated, fussy, person lacks proper training in response to stimuli, but his futile activities do not necessarily need deep psychological explanation. It is when the ordinarily well-controlled person breaks out into a profusion of activities that another explanation is required The condition may be pathological or physiological, but is not infrequently psychological. Can it ever be a manifestation of a desire to escape from real or imagined fears or discomfort? The escape motive, although a good working hypothesis, has become rather too fashionable and needs critical study. It is noteworthy, however, that activity is itself a biological method of escape. Flight and combat both involve strenuous exertion, and the sudden transition from paralysing fear to violent anger is an attempt to escape by an increase in activity. May it not be that this association in animals between escape and increased activities has extended itself in man to the mental sphere? When the stresses from which escape is sought increase in number or intensity we may react by *multiplication* of activity into activities The process may be conscious and deliberate, but the seeking refuge in an accumulation of miscellaneous activities is probably more often subconscious, and not readily or willingly understood.

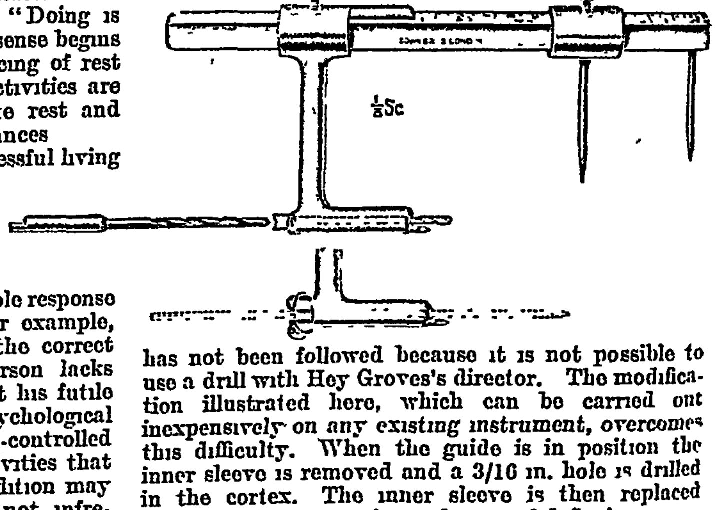
In judging the therapeutic value of such activities Dr. Sandison suggested restlessness as a criterion, defining it as ill-directed uncoördinated activity; a confusion resulting from inability to deal efficiently with stimuli When, by increasing activities, the excess of stimuli is absorbed and correlated, the restlessness may diminish or disappear and the escape into activities has been a therapeutic success. But when, despite increase of activities, restlessness increases and becomes restiveness, the cure is not working and the therapy needed may be a giving of insight into the escape motive.

Dr Sandison concluded, therefore, that escape by *activity is a normal physical and psychological* phenomenon and that its quantitative increase into activities may be a reasonable form of self-therapy. Its therapeutic value and normality can be judged by the extent to which it controls the restlessness it seeks to remedy.

NEW INVENTIONS

DIRECTOR FOR THE INSERTION OF SMITH-PETERSEN NAILS

IN inserting Smith-Petersen's nails I have sometimes found that the guide-wire is bent by the cortex of the femur. *In the original description of his* guide-wire Watson Jones advocated the use of a Morse drill for perforating the cortex, but his advice has not been followed because it is not possible to use a drill with Hey Groves's director. The modification illustrated here, which can be carried out inexpensively on any existing instrument, overcomes this difficulty. When the guide is in position the inner sleeve is removed and a 3/16 in. hole is drilled in the cortex. The inner sleeve is then replaced and the guide-wire is in no danger of deflexion.



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CHARLES E. KINDERSLEY, F.R C S.
Surgeon, Royal United Hospital, Bath

REVIEWS AND NOTICES OF BOOKS

The Medical Annual

A Yearbook of Treatment and Practitioner's Index Edited by H LETHEBY TIDY, M D , F R C P , and A RENDLE SHORT, M D , B Sc , F R C S Bristol John Wright and Sons, London Simpkin Marshall 1939 Pp 860 20*s*

ONCE again we have before us the most hardy of perennials. This year the "Medical Annual" chronicles an unusual list of advances in practical treatment The story of the sulphonamides and M & B 693 is fully recorded, both in a general review by R St A. Heathcote, and in a number of articles on the individual diseases in which treatment is spectacularly successful Aubrey Lewis gives a full account of insulin and convulsant therapy of schizophrenia, most impartial observers will agree that he strikes the right note of definite but guarded optimism In his other articles on psychological medicine Lewis reflects the change of orientation in psychiatry which has reached England from Germany and the United States The neglected but very important work of Gjessing of Oslo on periodicity in a small group (2–3 per cent) of schizophrenics is fully reviewed Gjessing was able to show in these cases a definite correlation between nitrogen excretion and retention and psychological change By thyroxine treatment it is apparently possible to remove the stored nitrogen and to stop both the mental and physical disturbance, reaccumulation can be prevented by suitable doses of thyroid

Nomenclature in medicine has been a source of endless and usually profitless controversy It is satisfactory that American and English cardiologists have agreed upon a standard method of recording lead IV electrocardiograms, while the new nomenclature of bundle-branch block seems to have come into its own W Evans records a new electrocardiogram denoting right bundle-branch block, which is apparently commoner than the tracing which has hitherto been accepted as standard curve M. Davidson, who succeeds Burrell as abstractor on pulmonary diseases, discusses the claims of "pneumonitis" as a substitute for "pneumonia" in cases of pulmonary infection without raised respiratory rate, and concludes that the term is probably of real value

As usual, the annual contains some admirable reviews Ethel Cassie writes on maternity and child welfare, S C Dyke on *clinical* pathology, P N Panton on the sedimentation rate, and H Gardiner-Hill on sex hormone therapy His list of proprietary substances suggests that the confusion in the minds of most doctors on the subject of the sex hormones will not be removed until manufacturers agree to abandon their trade names, substituting perhaps instead the initials of their firm in brackets after the scientific names At present, to give only a few examples, œstrone appears as Menformon, Œstroform, Theelin, Progynon and Unden, œstradiol benzoate as Dimenformon, Œstroform B and Progynon B, progesterone as Progestin, Proluton and Lutren, the gonadotropic hormones as Pregnyl, Antuitrin S, Gonan and Prolan (predominantly luteinising), and Antostab (predominantly follicle stimulating), and testosterone propionate as Testoviron and Neo hombreol Such a reform would probably benefit the manufacturers in the long run, as the present confusion is a potent inhibitor to the widespread use of the sex hormones Sir Stewart Duke Elder's article on contact glasses and D H Kitchin's on legal decisions and enactments are sufficiently extensive and informative to merit the title of reviews

In the surgical sections little advance is recorded Transfusion with cadaver and placental blood, and the localisation of cerebral tumours by means of the electro encephalogram are considered, but most of the surgical abstracts deal with the results of well established techniques It seems that experimental medicine has caught up and overtaken practical surgery, and that more of the younger surgeons will have to conquer the fascination of the theatre and enter the laboratory before the problems of the ætiology and physiopathology of the so-called surgical diseases are to be solved Among the many minor practical surgical points for which the "Medical Annual" finds space are Muldavin and Holtzman's successes with urea in the treatment of infected wounds, and Heggs's apparatus for continuous *duodenal suction*

Among the subjects of topical interest, G L Gates contributes a short and rather inadequate review of air raid precautions, and Macdonald Critchley writes on traffic lights with special reference to Fabing's essay on the conditioned reflexes induced in *drivers* The *outstanding disadvantage of our* English system of traffic lights is the impossibility of telling how long any one colour has been on The driver is thus kept in a state of mild tension until the colour changes In Moscow, Zürich, and in some parts of Berlin this has been simply overcome by substituting a revolving finger which traverses *slowly a sector of one colour and then enters the* sector of another colour This obviates the necessity for the yellow warning light, and the motorist knows exactly when the light is going to change This type of signal is suspended from a cable in the middle of the street

We can commend the "Medical Annual" to every *practitioner* who wishes to keep *abreast of* medicine in all its aspects In no other annual review are accuracy, enthusiasm, and discretion so nicely tempered

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Health and Nutrition in India

By N GANGULEE, formerly professor of agriculture and rural economy, University of Calcutta (1929–31), ex-member of the Royal Commission on Indian Agriculture (1927–28) London Faber and Faber. 1939 Pp 337 15*s*

THIS book is important it should be read by all interested in the economic and social development of India, and especially by the future leaders of Indian political life, to whom it is addressed The author insists that the first duty of any government is the provision of adequate food for the people, and to this end he presents the facts about health, nutrition, agriculture and animal husbandry in relation to the prevailing economic and social conditions of the Indian masses Sir John Orr in his introduction also stresses this aspect of nutrition work and relates the Indian problem to the world problem

The first part of the book—a review of nutrition and dietetics and of deficiency disease—could have been condensed with advantage, but its greatest defect is failure to differentiate accepted from controversial work The Indian bias towards a strict vegetarian regime may perhaps account for the stress laid on Prof Terroine's view that "there is no need to include protein of animal origin in the diet of man," *although* in later chapters the crying need for more milk and milk products, especially in the diets of infants and young children, is emphasised The second part of the book, devoted to the condition of the public health in India, makes sorry reading, and would be even more effective if Prof Gangulee, though always fair to the individual British worker, did not constantly labour the iniquities of the late government Sanitation, water-supply, infant and maternal mortality, tuberculosis, and deficiency diseases are reviewed and a brief account is given of the meagre public health, maternity and child welfare and other services There follows a valuable but rather prolix discussion of Indian foods In the last section of the book the responsibility of the state towards problems of nutrition is clearly set out and constructive suggestions are made for the betterment of the state of the public health of India. Prof Gangulee shows that the malnutrition of the masses is an economic problem, the solution of which lies in increasing the spending power of the people and in a proper organisation of agriculture and animal husbandry so that protective foods may be made available But he insists that more than this is necessary · research propaganda to overcome inertia and age-long social and religious habits and to bring pressure on the authorities, and the reorganisation of agriculture, animal husbandry and fisheries and of storage and transport facilities This section of the book should be a challenge to Indian workers to show how much they can achieve for their country.

Rheumatism

By BERTRAM S NISSÉ, M.D. Lond., M R.C.P., hon. physician, British Red Cross Clinic for Rheumatism. London: John Bale Medical Publications. 1938. Pp. 168. 5*s*.

THIS is a clear account of the more usual rheumatic conditions in a form which can be readily digested The author gives little indication, however, of the relative commonness or importance of the various symptoms, nor is the picture of the disease always balanced It is an exaggeration to say that the rheumatic pains of childhood "keep the child awake for hours at night"

The chapters on fibrositis are helpful, particularly the sections on panniculitis, bursitis and sciatica; the warning that a diagnosis of simple sciatica should not be made without a thorough systematic examination is always timely In the description of rheumatoid arthritis the psychological factor is neglected A good deal of useful information is given about treatment.

Atlas de phonocardiographie clinique

By A. CALÓ, assistant étranger à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1938. Pp. 104. Frs 60.

THE modern tendency is to regard the value of knowledge of the finer points of auscultation of the heart as outweighed by the difficulty of acquiring it. For two reasons the importance attached to this art has diminished: firstly because the functional efficiency of the diseased heart is now regarded as of more moment than its anatomical lesions; and secondly because methods of examining the heart have been introduced which are less liable to be affected by personal bias or error. For the development of a science of auscultation it has been found necessary to devise some objective method of recording the heart sounds with which to analyse and to check the more doubtful findings obtained by the stethoscope. It has been recognised for some time that the human ear is not capable of timing murmurs with the precision which was at one time thought possible and also that certain vibrations of low frequency produced by the heart escape auditory perception To record graphically only those heart sounds which are audible presents great difficulties, for any recording device not only registers the adventitious sounds which the trained ear has learned to disregard but also those of such low frequency as to be below its threshold of appreciation. Though in recent years it has become possible to record heart sounds electrically with more selectivity, it is still advisable, for simplification of their analysis, to have a synchronous record of the events of the cardiac cycle such as is given by an electrocardiogram or a tracing of the jugular pulse An objective method of checking what one hears through a stethoscope has obvious value for teaching purposes

In this volume advantage has been taken of the improvements in electrical technique to supply records of sound waves, electrocardiograms, and, where necessary, pulse and respiration tracings in 37 cases of cardiac disorder. The records are excellently reproduced and are presented simply without theoretical discussion of debatable matters. Those interested in phonocardiography will find here a comprehensive guide to the practical interpretation of graphic records of the heart sounds.

Aids to Forensic Medicine and Toxicology

(11th ed.) By J. H. RYFFEL, B Ch, lecturer in forensic medicine, Guy's Hospital London. Baillière, Tindall and Cox. 1939. Pp 170. 3*s*. 6*d*.

FORENSIC medicine is a difficult and complicated subject, but the questions asked on it at final examinations for medical degrees are by no means searching. Many who disapprove of small "aids" in principle will admit that it is reasonable for a student who knows this to want a clear summary within his reach. Dr. Ryffel's long experience as toxicologist to the Home Office is reflected in the new edition of the little book that was originally written by Dr. W. G. Aitchison Robertson. The publishers' note that it gives the main facts in a small compass is true and its longevity proves its value to the student and, we suspect, also to the harassed practitioner Dr. Ryffel's revision preserves the book—in its own elementary way—properly abreast of the times.

Yearbook of Dermatology and Syphilology

Edited by FRED WISE, M D., clinical professor of dermatology and syphilology, New York Post-Graduate Medical School and Hospital of Columbia University; and MARION B. SULZBERGER, M.D, assistant clinical professor of dermatology and syphilology at the school. Chicago. The Year Book Publishers, London: H. K. Lewis and Co. 1939. Pp. 719. 12*s*. 6*d*.

EACH year dermatologists await eagerly the publication of this compendium and they are never disappointed in its content. This year the abstracts of the most important papers on dermatology and syphilis number 545, taken from 81 periodicals published in 13 countries The summaries are so well done as to be miniature papers in themselves, they are grouped into fourteen sections and at the end of each of these is a supplementary bibliography. This yearbook is indispensable to the dermatologist and contains much material of interest and value to others

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[*See also pp.* 10, 13 & 19.]

THE LANCET

LONDON SATURDAY, APRIL 29, 1939

NURSING PROSPECTS

THE debate in the House of Commons on the training and working conditions of nurses (see p 1009) centred round service in peace-time The depth of feeling shown by members was informed not only by a close study of the Athlone interim report but also for the most part by personal knowledge of one or more aspects of the problem The reasons given for the shortage were the familiar ones of long hours, poor financial prospect and uncertain superannuation, the gap between leaving school and entering hospital, irksome restrictions, lack of consideration and amenities, and still in many places unsatisfactory food and lodging The dilemma of hospital authorities genuinely anxious to reduce working hours, despite the cost, was clearly brought out by Sir **FRANCIS FREMANTLE** Until hours are reduced the scarcity of recruits will continue, and until more personnel are enlisted hours cannot be reduced The introduction of a 96 hour fortnight would, according to the Athlone committee, generally require an increase of establishment varying from 20 to 30 per cent Colonel **PONSONBY** confirmed the lower of these figures by his list of the extra staff that would be needed at the London Hospital to reduce the hours of day-nurses from 105 to 96, at many hospitals the cut would have to be much more than 9 hours, with proportionate additional help Bearing in mind not only this necessary reform but the demand from every quarter for more nurses, Sir **FRANCIS** suggested that an annual entry of 20,000 is required now in approved training schools alone, apart from any future expansion This estimate seems a rather steep advance on the 12,000 a year which the Athlone committee regards as essential to maintain the present (inadequate) rate of recruitment Hospitals which depend largely on student labour for routine work should not, of course, try to enlist more probationers than the profession will easily absorb The figures given in the House, however, related to the entries to the preliminary and final state examinations rather than to those who achieved registration The *entries* to the preliminary state examination rose from 5984 in 1926 to 9624 in 1937, the corresponding figures for the final examinations for all the registers being 4269 and 9516 The *admissions* to the registers in the same years were 3228 and 6613 respectively, and though the entries are relevant to recruitment it is the actual output of trained nurses that matters from the point of view of eventual overcrowding There is in fact ample evidence that though twice as many nurses were admitted to the state registers in 1937 as in 1926, the increased supply has always been more than neutralised by the more rapidly growing demand An accumulated deficiency has thus to be made up (partly met at present by the employment of the "assistant nurse") and the difficulty of retaining the services of a trained nurse in many hospitals is now said to be even more serious than that of enlisting probationers It is agreed that a higher rather than a lower ratio of trained nurses to probationers is desirable at most approved schools, but the L C C have found it necessary to cope with the shortage by increasing the number of junior probationers admitted so as to release seniors in their fourth year to act as staff nurses Sir **FRANCIS**'s estimate may indeed not be much too high (it is presumably meant to include entries to mental hospitals) unless means are found to reduce considerably the wastage from defection of probationers and from failures at state examinations

The prospect of getting a substantial increase of recruits this year or next would not be rosy if they awaited assurance of the universal establishment of better conditions Mr **ELLIOT**, however, told the House that government action will not be deferred until the appearance of the final report of the Athlone committee, that the financial recommendations will be the subject of a statement and debate at a reasonably early date, and that Whitley councils and Burnham committees are under consideration He will confer with local authorities on the administrative recommendations and will ask the British Hospitals Association to draw the attention of the voluntary hospitals to them He proposes to approve the rule submitted to him by the General Nursing Council which will allow part of the preliminary state examination—anatomy, physiology, and hygiene—to be taken before entering hospital Organisation throughout the kingdom of pre nursing courses in these subjects is likely to yield a good harvest, since there will not only be full-time courses for secondary school girls but evening courses at technical institutes for girls from elementary schools who have to earn their living pending admission to hospital The Athlone committee has been criticised for paying more attention to smoothing the path from elementary school to hospital than to fostering the interest of the better educated girls, but those who acquire the school certificate at the usual age and have any desire to nurse will surely be encouraged by the possibility of taking their first professional examination only a year or so later It seems likely that the linking of entry to the nursing profession with the later stages of school life will greatly influence the numbers choosing this career, especially now that nursing is becoming generally recognised as an important national service

The latter part of Mr. **ELLIOT**'s speech in the House was devoted to an appeal for 100,000 nurses and nursing auxiliaries for civil defence Most of these will have to be women who besides taking lectures in first-aid and elementary nursing spend a number of hours—or a week or so in one spell—in the hospital to which they are allocated for brief concentrated experience They have been assured that they will be taught actual nursing duties and will not be expected to do domestic work. Here is an opportunity for propaganda that should not be missed. In the late war V.A.D.'s were sometimes snubbed or patronised instead of being welcomed as colleagues; if the volunteers are treated with courtesy, taught with patience, and allowed to see the interesting side of hospital work some of them may take up nursing as a permanent career, or secure others free to do so. It is unfortunate that the Athlone report should have appeared just now that attention is deflected to the urgency of preparation for a possible emergency, when the dilution of the nursing services by unskilled workers would be inevitable. It is the more satisfactory that the House was concerned at such a time with the permanent conditions of nursing service and showed eager determination to have these adjusted.

STATISTICS OF APPENDICITIS

In spite of the frequency of such diseases associated with various parts of the alimentary canal as gastric and duodenal ulcer, appendicitis and colitis, we still know extremely little about the causes that precipitate or predispose to an attack Lack of suitable experimental methods of producing the conditions in animals hamper adequate study of their ætiology; clinical material, of which there is certainly no dearth, has so far led to little advance in knowledge of the conditions which produce it. Close attention to the psychological and physiological make-up of the patient, and to his environment and mode of life, may in time give at least partial solutions to the problems, as is suggested, for instance, in the work of DAVIES and WILSON on the temperament of the gastric ulcer patient.[1] A broader line of approach lies in the statistical analysis of recorded mortality and morbidity figures in relation to social, economic and similar factors. While it is, of course, unlikely that the ætiology of these diseases can be completely elucidated by such means, there is certainly reason to hope that they may produce pointers to more acute clinical observation in certain directions and focus attention on relevant factors. At the least they define the scope of the problem and its epidemiological aspects (in the broadest sense of the word). Such a study has been published this week in which two members of the staff of the Medical Research Council make a comprehensive survey of the statistics of appendicitis.[2]

Surveying first the national mortality figures they show that in England and Wales there has been very little change over the last twenty years in the death-rate from appendicitis at all ages. The total annual mortality today is of the order of 3000 deaths and the rate usually lies between 80–85 per million for males and between 60–65 for females, so that males have a 25–30 per cent greater mortality than females Division of the latter by civil state suggests a rather higher incidence of mortality on the single woman than on the married. Examination of the rates at ages shows, however, that the stability of the crude rate conceals changes at different stages of life Mortality in the first five years of life and at over 45 years has definitely increased in the last twenty years, while at ages 5–45 there has been a considerable decline. The same trend is apparent in statistics from the United States. Particularly interesting is the history of mortality during the war and post-war years Its course (measured on women only as giving a more accurate picture) closely resembles that shown by diabetes mellitus —that is, a decline in the death-rate in the years 1915–18, especially at older ages, with a subsequent return to the pre-war level Various writers have suggested that the nature of the diet may have some influence in predisposing to appendicitis, that an excess of food, or perhaps certain types of food, may induce it. The reduction of the death-rate during the years of food restriction supports that view. The Registrar-General's statistics of mortality by social class, which the present authors quote in detail, show too that mortality falls most heavily on the socially fortunate classes and declines progressively as one passes down the social grades. The death-rate of the highest social class is as much as two and a half times as great as the rate of the lowest Over indulgence in food or in particular types of food is likely to be more frequent amongst the well-to-do, but clearly other factors might also play a part—for instance, possibly differences in the habit of taking purgatives or laxatives for abdominal pain or discomfort It would be interesting, as the authors point out, to test the view that appendicitis rarely occurs in institutions where the fare is plain, for example amongst some of the Roman Catholic orders or amongst vegetarians At present records are not available but they would be worth collecting if this is practicable. Statistical comparisons between different countries are not easy to make The figures collected by YOUNG and RUSSELL suggest that mortality in Germany is of the same order as that in this country, the rates of Scotland, Sweden and Switzerland are relatively high, those of Italy and Holland only about half the English figure. A curious feature in the German figures is the fact that whereas the death-rate in Prussia and Bavaria is 82 per million, in Saxony and Württemberg it is less than 50.

In the second half of their report YOUNG and RUSSELL consider closely the statistics of morbidity and case-mortality, and have extracted the records of the last 30–35 years of the London, St Bartholomew's and St. Thomas's hospitals These figures, in conjunction with others published in Scotland, America and Germany, show a great decline in the fatality of the disease. It is difficult to draw any certain conclusion on the incidence-rate but, remembering the lack of decline in the mortality-rate, it seems likely that there has been a definite increase in recent years, quite apart from any increase that may be due to more frequent resort to hospital and greater skill in diagnosis. Statistics of the insured population of Scotland also show a rising case-rate between 1930 and 1935, while the total sickness-rate from all causes was virtually stationary. Calculation of the fatality-rates for different types of cases suggests that in uncomplicated cases it is about 1 per cent, in frank general peritonitis about 28–30 per cent, and in appendicitis complicated by abscess about 6 per cent. Differences of classification between one hospital and another, and still more between one country and another, make it impossible to give more than approximate figures. It has often been observed that a successful result seems to depend largely upon the interval of time between onset of symptoms and admission to hospital or operation. Although the real advantage to be gained from early operation cannot be accurately represented by the available fatality-rates, because the comparability of the group at the different time intervals is impaired by circumstances that result in selection of cases, the authors are satisfied that early admission to hospital is one of the most potent factors in reducing fatality from the disease. They conclude that the only hopeful method of further reduction lies, therefore, in the education of the public to this end and to the avoidance of purgatives or laxatives in cases in any way simulating appendicitis. The clinical experience they quote gives little support to the view that many cases diagnosed as appendicitis today are not true cases of the disease at all but depend upon the psychological make up of the patient. For instance, of 8000 cases recorded in Edinburgh hospitals, and reported by WEVILL and WALLACE, only 6 per cent. showed at operation no disease of the appendix to account for their symptoms. In the hands of careful workers at great centres such cases may, of course, be much fewer than elsewhere, and the criteria of abnormality in an appendix is unlikely to be uniform in all pathological laboratories.

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[1] Davies D T., and Wilson, A T. M., *Lancet*, 1937, 2, 1353

[2] Appendicitis A Statistical Study By Matthew Young, M.D., and W T. Russell. *Spec Rep Ser med Res Coun, Lond* No 233 H M. Stationery Office 1939. Pp 64 *1s*

To summarise the main features of this report it seems that in this country we have in appendicitis a disease with an unchanging mortality-rate, producing close on 3000 deaths a year, a declining fatality-rate which is satisfactory, but probably an increasing rate of incidence; a disease with a clear differentiation of mortality by social class and one which, like diabetes, showed an appreciable reduction under the war period of food restriction; a disease which is particularly amenable to early treatment. YOUNG and RUSSELL have performed a useful service in the heavy task of collating and clearly presenting the available statistical material relating to it.

DEFECTS OF WORKMEN'S COMPENSATION

A ROYAL commission on workmen's compensation is now in session and will at length produce recommendations which may be translated into legislation or may be pigeon holed like those of the Holman Gregory committee. Meanwhile Sir ARNOLD WILSON and Prof HERMANN LEVY, whose studies of our social system make them in some sort a permanent royal commission of themselves, have published a historical survey of the subject.[1] They promise to set forth in a second volume the proposals for reform already foreshadowed in their preface. They find our existing scheme of workmen's compensation full of grave defects, extravagant in the cost of operation, wasteful of human health in its indifference to the need for rehabilitating injured workmen, and a source of ill feeling between employers and employed, and of friction between the medical profession and its patients.

The tragic separation of the compensatory from the curative and preventive aspects is indeed common knowledge. When the workman's injury is a fracture, somebody will take care that the tissues are reunited, but often too little attention is paid to restoration of function. The county court will see that the workman gets his award, but who will make sure that he gets treatment or furnish him with surgical appliances? The insurance companies concern themselves only with the risks of employment and display little interest in rehabilitation. An experienced county-court judge told the Holman Gregory committee that the basis of compensation should be extended far beyond mere pecuniary payment; it should include curative treatment for the curable and training for persons incapacitated from their old work. Ordinary surgical operations, said the judge, could be performed gratis in most general hospitals, but in the whole area of his jurisdiction (a large part of industrial Yorkshire) there was no institution where a workman could obtain curative treatment; "There are hundreds of people walking about in my district practically permanently incurable because they have not had the curative *treatment at the proper time*." The Holman Gregory committee made strong recommendations on this point without much result; compensation is given, and injuries are assessed, in cash only. If the Ministry of Health were not so preoccupied with the machinery and finance of local government, and the Home Office with A.R.P. and civil defence, and if the Treasury were not obliged to be so thrifty with the nation's money in a time of exceptional financial strain, something might be done.

On the long view the present system is without question uneconomical. Rehabilitation centres, of the pattern recently established by the Seamen's Hospital Society,[2] are needed throughout the country. Every sick and disabled man is a charge on industry and an item on the wrong side in the national budget. Sir ARNOLD WILSON and Prof LEVY will probably show us ways of saving money by judicious reforms. In their volume on industrial assurance they condemned the wasteful finance of the competition between industrial assurance companies; in writing of workmen's compensation also they are likely to prefer state administration to competition between insurance companies which exist for profit, are interested to settle claims cheaply, and drive too advantageous bargains, particularly with the unorganised worker. We shall be interested to see the specific reforms which the authors propound in their second volume. They seem to favour the creation of a workmen's compensation commissioner as recommended by the Holman Gregory committee. Among his duties would be the appointment and regulation of medical referees, the scheduling of new industrial diseases and the making of silicosis schemes. This proposal seems to raise high constitutional issues. If he worked as unobtrusively as the industrial assurance commissioner, who is also the registrar of friendly societies, all might be easy. But if his appointment fails to take workmen's compensation out of politics and away from the floor of the House of Commons, there must be some responsible Minister to answer questions in Parliament. The experiences of the Unemployment Assistance Board and the controversy over the means test were discouraging symptoms. Sir ARNOLD WILSON and Prof. LEVY may be trusted to make a strong case for anything they recommend. In this first instalment, thorough, scholarly and well documented, they have laid a solid foundation.

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[1] Workmen's Compensation. By Sir Arnold Wilson, M.P., and Prof Hermann Levy. Vol. I, Social and Political Development. London: Humphrey Milford, Oxford University Press. 1939. Pp 328. 10s.

[2] See *Lancet* 1938, 2, 1005, 1017.

ANNOTATIONS

PSYCHIATRIC CLINIC AT GUY'S

THE establishment of a special inpatient department for all kinds of mental illness at Guy's Hospital, made possible by the gift of £43,000 by Five Friends, is a new departure in British medicine. Hitherto a few beds have been provided at Guy's, the Middlesex, and other teaching hospitals for minor forms of mental illness, especially psychoneurotic conditions, and a ward has been set apart for the same purpose at King's College Hospital under the direction of the Maudsley, but there has been no comprehensive inpatient accommodation such as exists in the psychiatric clinics of the Continent or the United States. There are many reasons for welcoming this innovation. It is now generally agreed that the breach between general and psychological medicine is neither practically wise nor scientifically justified. This breach may have been produced in the past by considerations of expediency —it was thought wiser, for example, to move the "chronic lunatics" originally provided for in the will of Thomas Guy to another district and another establishment altogether—but recent advances in knowledge, including the recognition that outspoken insanity is only a fraction of the field of mental illness, has made such considerations of minor importance The new clinic is to consist of 42 beds in addition to the 5 beds in the general wards at present allotted to psychological illness It will be subdivided so as to enable mental illness of all kinds and degrees, including psychoneuroses, psychopathies and psychoses short of certifiability, to be accommodated. A considerable step will have been taken in this way towards breaking down the public dislike of mental illness by enabling such patients to be admitted and treated in a general hospital.

The clinic comes at a time when the treatment of the severer forms of mental illness has become much more active and has taken a form for which the facilities available for physical examination and control at a general hospital are particularly appropriate. Moreover, the importance of early treatment by the newer methods makes early admission still more necessary, and the public are more likely to agree to their mentally ill relatives receiving treatment at the earliest possible moment if it is to be given in a general hospital The advantages to medical education of such a clinic fortunately coincide with the advantages to the patient and the public It should do much to focus the interest of the student on this branch of medicine, since he will find suitable material close at hand throughout his clinical years The staff of the clinic should be a valuable addition to the teaching strength of the hospital, and should make it possible to extend the teaching of the psychological aspects of general disease in the medical and surgical wards. The staff themselves will benefit from constantly rubbing shoulders with colleagues in other branches of medicine, so that the commonly levelled charge of the isolation of psychiatry from general medicine will lose any validity it may have On the other hand, contact with the clinic should enable the rest of the hospital staff as well as the students to develop an intimacy with this aspect of medicine which cannot fail to be useful in their everyday practice Further, "as iron sharpeneth iron, so a man sharpeneth the countenance of his friend," and the presence of a complete psychiatric clinic cheek by jowl with the other departments of a great teaching hospital should provide the stimulus to research that comes only from the mutual contact of diverse branches of scientific inquiry.

ASPIRATION BIOPSY OF THE LIVER

THERE are few organs left in the body which are safe from the eye of a clinician looking down a "scope," or whose tissue may not be drawn up in a syringe and examined microscopically. Cysts and abscesses of the liver have been aspirated for over a hundred years, but in 1923 Bingel[1] reported the results of exploratory puncture of the solid portion of that organ as a diagnostic aid Since then a number of other writers have described its use, and a recent paper by Baron[2] from the Mount Sinai Hospital justifies an assessment of its value. The technique seemed simple. A preliminary hypnotic is given, because the operation is painful even with local anæsthesia A 20 c cm. Record syringe with a 9 cm. No. 13 gauge needle is employed, and after anæsthetising the skin and making a small incision the needle is inserted to the right of the epigastrium below the costal margin and directed upwards and laterally; when the liver is reached constant suction is maintained in order to obtain a core of liver tissue, and after the needle has been withdrawn its contents are placed in fixative and sections prepared.

Baron describes 35 cases of suspected hepatic metastases, cirrhosis, or catarrhal and chronic jaundice in which the operation was used to assist diagnosis In the 16 cases of suspected carcinoma biopsy produced neoplastic tissue in 9 and normal liver tissue in 5; at laparotomy 3 of the latter were found to have metastases, but the other 2 were free from growth. From 1 of the 2 non-malignant cases in this group clear yellow fluid was obtained which led to a diagnosis of congenital cystic disease, and a pyelogram showed a similar change in the kidneys In the other blood welled into the syringe used for anæsthetising the peritoneum; a hæmangeioma wa

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1. Bingel, A., *Verh dtsch Ges inn Med* 1923, 35, 210
2. Baron, E, *Arch. intern Med* February, 1939, p. 276

OTTAWA CIVIC HOSP

suspected and was confirmed at operation A diagnosis of cirrhosis was made in 5 cases, in 2 of these the aspiration of carcinomatous tissue proved the diagnosis wrong, but in the other 3 normal liver tissue was reported, though subsequent post mortem examination revealed a cirrhosis In 8 cases of chronic jaundice the biopsy provided evidence of biliary obstruction but did not materially assist the diagnosis, of 4 cases of catarrhal jaundice 3 showed little abnormality, but in the fourth a granuloma around a schistosoma ovum was obtained and the ova were subsequently obtained in the fæces Of these 35 cases, therefore, the information obtained was of real value and corrected the clinical diagnosis in 7, in 5 the findings were incorrect, in 9 the clinical diagnosis was confirmed, and in 13 the biopsy was of no material assistance

The dangers of this procedure must be borne in mind Nearly 300 aspiration biopsies have been described and there have been 6 deaths, 5 being due to hæmorrhage and 1 to peritonitis Baron described 1 case in which the colon was punctured and a portion of mucosa aspirated into the syringe, but at operation three days later there was no leak or peritoneal reaction A further danger not mentioned by Baron but described by Kettle[3] is the implantation of malignant tissue in the track of the needle A diagnostic procedure with a mortality of over 2 per cent, in which the information obtained is of real value in only 20 per cent and incorrect in 14 per cent of cases, does not seem to be a valuable addition to the clinician's armamentarium, and there is little doubt that laparoscopy, which has been advocated and used extensively by Ruddock,[4] would give far more information with a negligible risk

NATURAL SCIENCE AT DUNDEE

The British Association for the Advancement of Science will meet this year at Dundee from Aug 30 to Sept 6 The meeting is always a stimulus to the intellectual life of the community in which it is held and contrariwise takes some of its tone from the character of the meeting place Dundee is this year celebrating its civic jubilee It has twice before been the association's host, once in 1867 when the Duke of Buccleuch, F R S, presided, and again in 1912, when Sharpey Schafer presided and a citizen made the occasion memorable by giving £11,000 towards a fund for scientific research Although Boswell passed through the burgh without finding anything remarkable, it has often shown both political and commercial enterprise Famous wooden ships, among them the *Forfarshire* and the *Discovery,* were built on its stocks, while flax and jute have played an alternating role in its prosperity This year Sir Albert Seward, F R S, is president and will deliver an address on the Western Isles through the Mists of Ages Sectional presidents have chosen subjects as follows chemistry, Prof E K. Rideal, F R S, film reactions as a new approach to biology, zoology, Prof James Ritchie, D Sc, perspectives in evolution, anthropology, Prof W F Le Gros Clark, F R S, the scope and limitations of physical anthropology, physiology, Prof David Burns D Sc, the assessment of physical fitness The division for the social and international relations of science, which was founded at the Cambridge meeting last year, will hold discussions on the coördination of scientific research, on population and on nutrition, on the Sunday evening its chairman Sir Richard Gregory, F R S, will give a public lecture on science and social ethics Subjects for discussion in the sections include tissue respiration, air conditioning, nutrition and physique, and the teaching of anthropology The section of physiology will devote a whole day session at St Andrews to the problem of pain Mr Isaiah Bowman, D Sc, president of Johns Hopkins University, representing the *American Association for the Advancement of Science,* will deliver an address on Sept 5 In October the association will publish the first number of a new quarterly periodical entitled the *Advancement of Science,* which is to take the place of its annual report At the moment only about a quarter of those who attend its meetings are members of the association This should be remedied Applications for membership may be addressed to the secretary of the association at Burlington House, Piccadilly, London, W 1

A REGULATOR OF METABOLISM

In a Cameron lecture delivered at Edinburgh last June Prof J B Collip, F R S, gave a preliminary account of a new pituitary hormone, isolated in his laboratory at Montreal, which has a specific action on the basal metabolic rate[1] This principle (designated No 622) can be extracted from all parts of the pituitary, but particularly from pituitary colloid and the pars intermedia[2] Its chief property is the power *to raise the basal metabolic rate immediately after* its injection, at the same time lowering the respiratory quotient The fall in R Q is mainly but not wholly attributable to increased metabolism of fat, and it is suggested that there is a concurrent increase in gluconeogenesis and diminution in carbohydrate metabolism From the other pituitary principles the new principle differs in its greater stability to heat, alkali and pepsin These properties serve to distinguish it from growth hormone and it can also be readily separated from gonadotropic and adrenotropic principles, moreover it acts on animals after hypophysectomy or adrenalectomy[3] Of the other pituitary hormones, oxytocin and vasopressin in pure form do not stimulate metabolism, and thyrotropic hormone, though it has the same metabolic action, is quite distinct from the new principle, which exerts its maximal effect 3–5 hours after injection, whereas thyrotropic hormone has a latent period of 4–5 days The metabolism stimulating principle acts in the thyroidectomised animal, and if it is injected daily for a long time the treated animal develops no such resistance as would develop with injections of thyrotropic hormone No 622 has not yet, however, been separated from the melanophore expanding principle, any potent preparation of one of them contains large amounts of the other, and their relative amounts in different parts of the pituitary are similar Their chemical properties are also similar and they may well be identical.

About the normal rôle of the new principle in the body little is at present known, but changes have been observed in the respiratory quotient and in the metabolism of the primary foodstuffs in hypophysectomised animals and those treated with pituitary extracts Rabinowitch, Mountford, O'Donovan and Collip,[4] in testing the preparation in human beings, have found that the results of animal experiments could be duplicated. The diminution in the respiratory quotient was striking and the increase in respiratory quotient following ingestion of glucose could be much diminished by simultaneous injection of the 622. The possible uses of the new preparation in the treatment of obesity and other conditions in which an increased metabolic rate would be advantageous are being investigated. Certainly a preparation with a quick and physiological action of this kind would be welcome.

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[3] Kettle, E H, Pathology of Tumours, London 1925, p 26
[4] Ruddock J C, *Surg Gynec Obstet* 1937, 65 623

[1] See *Lancet* 1938, 1, 1456 1460
[2] O Donovan, D K, and Collip, J B, *Endocrinology,* 1938 23 718
[3] Billingsley, L W O Donovan and Collip *Ibid,* 1939 24, 63
[4] Rabinowitch, I M Mountford M, O Donovan and Collip *Canad med Ass J* February, 1939, p 105

THE CROYDON TYPHOID CLAIMS

IT was reported last week that 70 of the 230 claims against the Croydon corporation in respect of the typhoid epidemic at the end of 1937 have now been settled; 7 of these are said to be related to fatal cases. It appears that some 70 or 80 claims received by the corporation were sent in too late; for under the Public Authorities Protection Act claims against a public authority must be made within six months of the act, neglect or default complained of. The Croydon town council has already decided by an overwhelming majority to pay compensation in these cases which are out of time, and for this purpose a clause has been included in a bill now before Parliament. No payment can be made until the bill receives the Royal Assent—probably just before Parliament rises for the autumn vacation in August.

VITAMIN E

FROM being the most dubious of the vitamins, vitamin E has emerged into being a well-defined substance. Its properties are becoming well known and it may soon achieve the distinction of an international standard and unit. On April 22 it was the sole subject of discussion at a whole-day conference held at the London School of Hygiene and Tropical Medicine, and organised by the nutrition panel of the food group of the Society of Chemistry and Industry. The morning session was devoted to the chemistry of the vitamin and provided probably the most interesting discussion and the most exact information. The chief topic of general interest was the correlation between chemical structure and specificity of biological action. It was made clear that biological action is not confined to one isomer or even to the one substance, but that the tocopherol molecule could be subjected to some degree of substitution without losing all biological activity, though with certain substituents in certain positions this activity is intensified. The outcome of studies on this subject, as summarised by the chairman, Prof. A. R. Todd, seems to be that as in some of the sex hormones there is a narrow specificity but a possibility of action by a wide group of unrelated substances. At the afternoon session most of the communications turned on whether or not vitamin E is related to the hormones. No overwhelmingly convincing evidence was adduced, for or against a relation, nor did the protagonists on either side succeed in convincing their opponents or the neutral observers. Interesting work from America by Dr. Karl Mason tended to show how small is the transfer of vitamin E from the mother rat to her young, either by way of the placenta or the milk, though some transfer was found to take place in the milk. An excellent film demonstrating the peculiar head and leg movement of young rats deprived of vitamin E was shown by Dr. H. M. Wüest of Basle. In the evening the clinical applications of vitamin E in human beings were under discussion. All the clinical work in which vitamin E has been used in treatment of habitual and threatened abortion is based on belief in a close relation between vitamin E and the sex hormones. A number of clinicians have recorded successful results, usually in 70 or 80 per cent. of the women treated for one or other of these conditions, and encouraging reports were presented to the meeting from Dr. Vogt-Möller of Copenhagen, Dr. E. V. Shute of Toronto, Mr. D. W. Currie of Leeds and Dr. C. R. Macdonald of Sheffield. It is recognised however that the assessment of such clinical results is full of pitfalls. It is difficult to obtain accurate and reliable case-histories of habitual abortion, or to define threatened abortion. Moreover, to obtain reliable figures very large numbers of cases are needed for study, with an equal number of comparable untreated controls. In his summing-up, Prof. F. J. Browne, who presided at this third session, was at particular pains to emphasise these points.

Those who remained at the conference throughout the day, as most did, must have left with the feeling that they had surveyed the field in excellent company, and carried away a well-balanced idea of the subject.

TEMPERATURE MEASUREMENT IN ARTIFICIAL PYREXIA

ALTHOUGH it is generally taken for granted that the rectal temperature gives the most exact estimate of the temperature of the body, it is also recognised that in the ordinary course of practice a compromise with accuracy is permissible. Most doctors use either the mouth or the axillary temperature, which, provided the usual precautions have been observed, will differ from the rectal temperature by a constant amount. It is doubtful, however, if the practitioner ever performs this bit of mental arithmetic. He knows from experience what the thermometer reading means when he "takes the patient's temperature" by his own method, and it is of little interest to him or to the patient whether or not it has any precise scientific meaning. The position is different during treatment by artificial pyrexia, in which the patient's temperature is forcibly raised against the resistance of all his compensatory mechanisms. Here a casual record of how the patient is getting on is insufficient, for his life has been taken entirely out of the control of nature and lies in the hands of his attendants. The temperature of the cells of his body must not exceed a certain limit, and it is important that such record as is kept should indicate his maximum temperature, or bear an infallible relation to it. It must be remembered that all the physiological mechanisms for reducing temperature are at the highest pitch of activity, and although the heating process overcomes them and prevents any general lowering of the body temperature, they may well set up a local lag peripherally in the heating process. Mouth temperature has very grave deficiencies as a criterion, and there is much to be said for some apparatus giving a continuous record. The patient's temperature may rise for a time after withdrawal of the actual heat owing to the abnormal stimulus to cell metabolism, and in order to predict the course of his pyrexia after such withdrawal a continuous record of his temperature for comparison with standard curves would seem advisable. The use of a pyrometer in the rectum would fulfil the necessary conditions, and could be read at frequent regular intervals without disturbing the patient. Neymann and Osborne[1] investigated the temperature of various parts of the body during treatment with several methods of artificial pyrexia, and their records are well worth studying. In a case treated by diathermy the temperature of the subcutaneous tissues of the thigh was practically never within two degrees of the rectal temperature, and at one period was six degrees lower.

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[1] Neymann, C. A., and Osborne, S. L., *Amer. J. Syph.* 1934, 18, 28.

THE BUDGET

IN his broadcast on Tuesday evening Sir John Simon remarked that there are no good taxes. The additional burden he was proposing he described as the price of liberty and security; including loans the defence expenditure will this year represent £13 a head of the population, and it was fair to ask all kinds of citizens to contribute. Of the new taxes imposed, which are briefly set out in our Parliamentary Intelligence, the increased horse-power duty on motor cars will fall somewhat heavily on the medical practitioner, since it means an average extra expenditure of perhaps £6–7 a year on cars which, though nominally private, are as much a part of his business as any tradesman's. An increase in income tax, however, might well have hit him more; for he would feel it not only directly but also indirectly through his patients. Doctors would be the first to support the optimistic suggestion of the member for Greenock who on the eve of the Budget asked the Chancellor to allow the wage earner to deduct medical fees and expenses from his assessment. They will see less justice in the release from stamp duty of patent medicines, which will, at all events for a time, be marketed at every kind of store, no licence being now required. Whatever its fiscal convenience, this is socially and medically a retrograde step.

CEREBRAL DEFECTS AND CÆSAREAN SECTION

IN a school for mental defectives in Helsingfors Brander[1] discovered three children who had been born by cæsarean section, and he was impressed by the fact that although this operation is often performed to prevent damage to the baby, it seemed possible from their records that there had in fact been some cerebral injury in each of these three cases. He found further that the proportion of children born by cæsarean section was about the same in comparable groups in the ordinary schools and in the school for mental defectives. A search of the literature revealed over 70 examples of intracranial lesions found post mortem in babies who had been delivered by cæsarean section. Brander attempts to dispose of the possibility that babies developing cerebral defects after cæsarean section would have developed them in any case owing to inborn errors in the development of the brain, but without more post-mortem evidence this point must remain doubtful. He divides the risks of cæsarean section to the baby into three groups. First, those operating before birth, such as disorders of pregnancy and long drawn out or very severe labour, particularly when associated with a narrow pelvis, an abnormal position and a well engaged head. Secondly, those related to the actual operation. The method of extracting the baby seems to be of some importance, and extraction by foot was common in the fatal cases. The use of forceps in extracting the head also seems to add to the risk, as do the operative difficulties arising from carrying the incision through the placenta. Thirdly come the dangers to which the baby *is* equally exposed whether born by the natural route or by abdominal section—for example, prematurity, the hæmorrhagic diathesis, and some forms of asphyxia. Brander advises careful consideration in the choice of anæsthetic, and quotes some authorities who advocate local anæsthesia as a safer method. It is clear from his summary of the literature that complications were present in most of the cases that proved fatal for the baby, and that the complications were not always foreseen. Perhaps more could be done from the point of view of prevention if it were more generally realised that the cæsarean operation is not without risks to the baby.

LADY ABERDEEN

IT has been well said of the Dowager Marchioness of Aberdeen and Temair that she took an intense and motherly interest in the life of every country in which her lot was cast. Our Dublin correspondent tells on another page what this meant to the Irish people. When the Aberdeens first came to Dublin there was no public health system in Ireland worthy of the name and it was the Vicereine who founded the Women's National Health Association which initiated every movement for the betterment of women and children and built the first sanatorium in the country. And this was typical of her life wherever it happened to be led. In Canada she founded the Victorian Order of Nurses, in Scotland she was chairman of the committee for women's training and employment, and for untold years she was president of the International Council of Women which was the mother of the health section of the League of Nations. And all along her work in the cause of peace was unceasing; the temple of peace at the Glasgow exhibition was a final expression of it.

ORTHOPÆDICS IN SOUTH AFRICA

IN our issue of Feb. 11 (p. 337) we briefly described a scheme for the orthopædic care of the ten million inhabitants of South Africa, drawn up by Prof. G. R. Girdlestone after a survey made at the request of Lord Nuffield, who has contributed £100,000 as a nucleus. Prof. Girdlestone's scheme was approved by the trustees of the Nuffield fund, including Mr. C. T. te Water, high commissioner for South Africa, before being submitted to the Union government. According to press reports, however, it has now been rejected as too costly. The government think the estimated expenditure of £1,000,000 excessive in view of the other urgent public health needs of the country, and an alternative scheme, costing about £300,000 and based on two big institutions in Johannesburg and Cape Town, is said to be under consideration.

Major-General R. W. D. LESLIE has been appointed honorary physician to the King, and Major-General A. D. FRASER honorary surgeon to the King, in succession to Major-General G. A. D. Harvey and Major-General H. H. A. Emerson who have retired.

In the forthcoming senatorial election for London University Sir ERNEST GRAHAM LITTLE, M.P., again offers himself as representative of the graduates in medicine. He is opposed by Mr. L. VERNON CARGILL. Prof. M. GREENWOOD, F.R.S., is standing for re-election by the graduates in science.

On the nomination of the presidents of the Royal Colleges of Physicians and Surgeons the Minister of Health has appointed as additional consultant advisers on the organisation of hospitals in England and Wales in war time Mr. W. KELSEY FRY (dental surgery with special reference to jaw injuries) and Mr. H. A. T. FAIRBANK (orthopædic surgery).

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[1] Brander, T., *Acta pædiat. Stockh.* 1938, 23, 115.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Tuberculosis Not an Accident of Employment

Miss Savage, a state-registered nurse formerly at the London County Council hospital at Bethnal Green, has lost a claim against the council under the Workmen's Compensation Act in respect of tuberculosis contracted by her in the course of her nursing. She had worked in the tuberculosis ward for 16 weeks, and, by way of fixing the date of infection, she spoke of an occasion on Dec 26, 1937, when a patient coughed in her face. His honour Judge Lilley at the Shoreditch county court rejected the claim with regret. He thought that Miss Savage would never have contracted the disease if she had not gone to the consumptive ward. He did not, however, regard the coughing of a patient as an abnormal incident amounting to an accident within the meaning of the act The mere opportunity of infection in the course of employment was not enough to establish the applicant's right to compensation The Court of Appeal and House of Lords had repeatedly uttered warnings that the mere fact of contracting a disease was not a ground for finding that there had been an accident within the Workmen's Compensation Act. Judge Lilley emphasised that tuberculosis had not been scheduled as an industrial disease under the act. He therefore felt obliged to decide against Miss Savage. A stay of execution was granted in order that her advisers might consider the question of appealing. The conception of an "accident" within the meaning of the act necessarily involving some element of surprise or unusualness (an "abnormal incident") raises interesting legal arguments If it were established that on a specific occasion particles of infected sputum from a tuberculous patient alighted on the nurse's face and that the infection could thus be transmitted, there would seem to be the makings of an "accident" even though nurses in a tuberculosis ward are perfectly aware that patients are likely to cough In Brintons Ltd *v* Turvey (1905) the flying of an anthrax bacillus out of some wool which a workman was sorting into the workman's eye at a time which could be approximately fixed was held a sufficient "accident" of his employment. The decision in Martin *v.* Manchester Corporation (1912), where a fever-hospital attendant contracted fever, has been reinforced recently in another case where a nurse in an infectious diseases hospital caught one of the infectious diseases to which the risks of her work exposed her The appeal in Miss Savage's case should therefore produce an interesting review of the law.

Adjourned Inquests and Criminal Proceedings

A Salisbury correspondent, contributing notes from the provinces to a weekly legal journal, mentions a "difficult point of coroner's practice" as having lately occurred in Wiltshire A death followed a motoring accident. The coroner adjourned his inquest since proceedings for manslaughter were being taken against the motorist At the police-court the motorist pleaded guilty to the secondary charge of dangerous driving, and thereupon the manslaughter charge was withdrawn. The coroner closed the inquest and the matter ended. The correspondent remarks that this was believed to have been the first case of its kind.

Under section 20 of the Coroners (Amendment) Act, 1926, the coroner may, after the conclusion of the criminal proceedings, resume the adjourned inquest "if he is of opinion that there is sufficient cause to do so." There is, however, a proviso that, if in the course of the criminal proceedings anyone has been charged on indictment, then the resumed inquest must not result in charging him with an offence on which he could have been convicted on the indictment, nor must it result in any finding inconsistent with the determinations reached in the criminal proceedings This proviso preserves the common law principle that a man cannot be put in peril twice for the same offence The charge of manslaughter having been dropped in the Wiltshire case at the police-court proceedings the coroner's resumed inquest could not have resulted in the committal of the motorist for manslaughter What is "sufficient cause" for resuming an adjourned inquest? Jervis on Coroners suggests, by way of answer to this question, that a coroner might properly proceed if he thought that magistrates had refused to commit through lack of sufficient evidence or for some possibly political motive. "In all street accidents," adds the editor, "the coroner should certainly complete his inquiry"

In the Wiltshire case the criminal proceedings resulted in conviction for a minor offence It is not unusual for a coroner to find that the police decline to take any proceedings at all If in these circumstances the coroner's inquisition sends the motorist for trial, the coroner's action is often frustrated by prosecuting counsel offering no evidence at the assizes, thus making inevitable a formal verdict of "not guilty." But occasionally the coroner is justified Not long ago at Manchester assizes the prosecution was disposed to offer no evidence on a coroner's committal when Mr. Justice Wrottesley insisted on the case being opened and the witnesses called. The judge had presumably studied the depositions taken at the inquest and had come to the conclusion that there was a case for the accused to answer. The accused was eventually acquitted; but the coroner's court had once more, in the words of Jervis, usefully provided "a collateral security against crime"

PARIS

(FROM OUR OWN CORRESPONDENT)

SAFETY—NATIONAL AND PERSONAL

How much more A.R.P.-minded we are now than we were last September! Then the crisis developed so suddenly that the civilians, at any rate, had hardly become accustomed to the thought of air-raids when the doctrine of appeasement overtook us like a whiff of chloroform and we forgot A R.P. as quickly as possible Now, with the international temperature rising steadily, not with a jerky peak, we are taking a more sustained and practical interest in protection. The notices issued by the Government in March, 1938, and again in February of this year have begun to take effect, and the communities with the most enterprising leaders have already translated these notices into acts. An excellent example has been set by the town of Colombes, a suburb of Paris, whose A R P. scheme was solemnly inaugurated early in April The mayor and municipality have been

[illegible]

well to the occasion and put at the service of the organisers of the Colombes scheme a building and grounds which will henceforth serve as a central school of A R P The citizens of Colombes of both sexes and every age can now turn to it for inspiration and training Here provision is made for every student of A R P , from the fervent devotee ready to put in the regulation 72 hours a year to the more casual spectator who can pick up tips on how to organise a family shelter

Between June 11 and 18 of this year l'Œuvre pour la Sécurité et l'Organisation des Secours will organise in Paris a national safety week under government patronage The topics to be treated fall into three main categories (1) protection against fire, voluntary evacuation, attacks from the air, extinction of lights, measures against bombardment, gas defence and medical aid ; (2) transport problems affecting travel by road, rail, water, and air (including even the modest bicycle), and (3) various aspects of public health

THE SPANISH REFUGEES

Now that the problem of the Spanish refugees has ceased to be so acute, it is possible to study it in better perspective By their extravagant contradictions the figures originally published were illustrative of the chaos existing when the human dam burst and the counting of heads and even of units became quite impossible Now, thanks to a detailed report by Dr Cavaillon and Dr Leclainche of the French ministry of public health, we know that approximately 200,000 able bodied militiamen and some 12,000 wounded, and about 160,000 civilians of both sexes and all ages flowed over into France in successive waves The inclemency of the weather, the shortage of food and clothing, and the lack of adequate housing accommodation, not to mention hospital accommodation, strained the resources of the French military and civil authorities to breaking point Terrible hardships were inevitable But it says much for the care given to the wounded that the deaths among them numbered only 262 While syphilis and gonorrhœa were rare, soft sore was so common that it was found in about 25 per cent of the militiamen—an amazingly high rate more illustrative of the human misery overwhelming this community than any word-picture But such epidemic diseases as influenza, measles, diphtheria, whooping cough, and cerebrospinal fever did not inflict the anticipated ravages, and it was ultimately possible to provide the necessary hospital accommodation for most of the serious cases of infectious disease A reference in this report to the British Red Cross and its representative voices the appreciation of the French authorities for the aid coming from this quarter

IRELAND

(FROM OUR OWN CORRESPONDENT)

ISHBEL, LADY ABERDEEN

NOWHERE has the news of the death of the Dowager Marchioness of Aberdeen and Temair caused greater regret than in Ireland, with which she had close ties for more than fifty years. In the middle 'eighties of the last century Lord Aberdeen was Viceroy of Ireland for a short period, and Lady Aberdeen who was proud of the Irish blood she inherited through her mother, interested herself actively in the promotion of Irish industries She founded an association to make them better known and kept in close touch with it during the years that intervened between her husband's first and second viceroyalty which came some twenty years later On her return to Dublin she turned her attention to health, and in the first instance took up the subject of tuberculosis At that time—now more than thirty years ago—there was in this country no public-health system worth the name, tuberculosis was rampant, as were also the acute infective fevers, and there was little public interest in matters concerning health Gathering a group of enthusiasts around her, of whom the late Sir William John Thompson was one, she inaugurated a popular campaign against tuberculosis She founded an association—the Women's National Health Association—to organise the campaign, and she toured the country lecturing in every county and founding branches of the association everywhere. She succeeded by sheer energy in rousing interest in the public and, perhaps even a more difficult task, forced the reactionary Local Government Board—the central authority in health affairs—into activity When, a few years later, the coming into force of the first National Health Insurance Act provided a means of financing, at any rate in part, the establishment of sanatoriums, her campaign had already educated the public mind and in particular the minds of the local authorities into recognising the need for action Her own organisation set an example by establishing the Peamount Sanatorium in co Dublin, which still carries on its good work under the same auspices Having set the country hard at work against tuberculosis, Lady Aberdeen directed her activities to the health of infants She established numbers of " baby clubs " in the poorer districts of the larger towns, where mothers received instruction in the care of children Many of these clubs still carry on their good work after their early " members " have become men and women

The outbreak of the Great War made further calls on Lady Aberdeen She immediately organised a City of Dublin branch of the British Red Cross Society, under the auspices of which hundreds of young women fitted themselves for V A D duty at home and overseas The principal activity of the branch was, however, the establishment of a red-cross hospital in Dublin Castle Opened in 1915, it was staffed by members of the honorary staffs of the Dublin hospitals and was working without interruption until the early months of 1919

In 1909, when the British Medical Association held its annual meeting in Belfast, it elected the Countess of Aberdeen an honorary member, the only instance of such an honour being conferred on a woman

Lady Aberdeen's work in and for Ireland was not easy The opposition she had to meet was sometimes based merely on the ignorance of prejudice but sometimes on political dislike Her friends were not always wisely chosen, for she was not always able to distinguish those who were willing to attach themselves to an organisation under the patronage of the wife of the viceroy from those really interested in humanitarian work Nevertheless, her boundless energy and patience succeeded, and to her is largely due the modern development of public-health work in Ireland The departure of Lord Aberdeen and herself from Ireland did not put an end to her interest in the various activities she had started She retained a flat in Dublin for her personal use and paid visits at frequent intervals She always presided at the annual meeting of the Women's National Health Association, and was to have done so next week

Dr. Robert Fleig Library

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN ONLOOKER

V

IN this fifth week of April I greet you again, my Patient Reader, and will tell you what should be done about everything. In the first place—

READER—May I interrupt? It has been a confusing month, in more ways than one But I must say the impression left on me by your opinions is that they lead nowhere at all.

AUTHOR—Pray explain.

READER—One week you told us, at some length, that competitive private practice for fees is all wrong; but next week you said you still wanted everyone to have a family doctor. Then you pointed out that practitioners must work with (and perhaps in) hospitals; but just as I was expecting you to declare for a well-organised state medical service you announced that medicine must keep clear of the government. Whatever *do* you want?

AUTHOR—I want the best of all the various worlds. I want the patient to have a personal service for himself and a scientific service for his diseases, and I want to be sure that both of them are working solely for his benefit. I want his family doctor to be a friend in need, and not also a friend in need of his money; a professional man, not a business man. I want his doctor to be his *own* doctor, fully and continuously responsible to him. I want the patient to go to hospitals which (like the voluntary hospitals of today) are conducted on his behalf, and not on behalf of his employer or his government I want him to remain a patient and not become a sick workman or a sick citizen.

* * *

READER—Well, we've got panel doctors and voluntary hospitals already Aren't you satisfied? Why do you want to reorganise things?

AUTHOR—Hasn't it ever struck you that almost everyone in the profession is demanding reorganisation? That almost everyone is demanding a state medical service? No, I know very few of them would admit it; doctors in general have no use for socialism or any nonsense of that sort But if you look round you'll see every kind of specialist asking for state intervention to secure proper help for the particular people he has to treat The orthopædist demands state provision for cripples, the otologist demands clinics for children with otorrhœa; the physician demands clinics for rheumatism, rest homes for heart disease, and free serum for pneumonia, the tuberculosis specialist has his schemes of supervision, the gynæcologist his maternity services, the immunologist his proposals for inoculation; the cancer specialist devises official machinery for securing early treatment; the oculist, the dentist, and the psychiatrist are all of them anxious to catch their patient young. On any front of medicine it jumps to the eyes that our failures are *largely* failures of organisation And anyone who looks at the whole battlefield must see that arrangements for medical care have simply got to be rationalised—to be made less complex and more effective

READER—Then you really do want a state medical service after all?

AUTHOR—No, I want its advantages without its disadvantages I see two disadvantages First, the function of medicine—the care of the individual—differs profoundly from the function of government, and the relation of the state officer to the citizen is less intimate, and less useful for most medical purposes, than the relation of the doctor to his own patient Secondly, central administration of a single enormous medical service would paralyse initiative and tie everyone up in red tape

READER—And the right solution is?

AUTHOR—The solution is regional medical services, with a high degree of autonomy, integrated through a National Medical Corporation. I am not sure just how large the regions should be, but I think the germ of them is to be found in the local boards in Oxford, Manchester and other areas which are trying to coördinate the work of the municipal and voluntary hospitals My regions would include not only the hospitals but also the catchment areas from which they draw their patients.

READER—Your idea is, I take it, that the National Medical Corporation would replace the Ministry of Health, and the regional services would replace the local health authorities?

AUTHOR—Not altogether. Part of the Ministry is, and must remain, a necessary department of government, responsible for any coercive measures required in the interest of the community, such as regulations about inoculation or eugenic sterilisation The regional services and corporation would have to obey orders in these matters, like anybody else Though the services and the corporation would undertake much of what is now called preventive medicine, the Ministry of Health and local authorities would keep the responsibility for all forms of environmental hygiene involving compulsion; they could lay down, for instance, what action would be taken by the regional service in a district attacked by an epidemic But the medical officer of health—who might now become a peripheral officer of the Ministry—would not, as nowadays, be in charge of his area's medical service; which would, as a matter of fact, take over much of his work. Not only would the regional service control the general hospitals and tuberculosis dispensaries, but it would *also* be responsible for V D clinics, maternity and child welfare, and most (if not all) of the hospitals for infectious diseases and mental disorder. Doctors of the regional service would not themselves certify that insane or infectious patients require detention; but I don't see why they should not treat patients whom the governing and legal authorities have certified as needing confinement

READER—Aren't you splitting hairs over this question of coercive powers?

AUTHOR—*I don't think so* If *medicine is to be* practised through highly organised machines I think it really matters that they should not assume greater power over the patient than a private doctor or a voluntary hospital has today If he is to be incarcerated, or vaccinated, or sterilised, or have his adenoids out, willy nilly, the order must be made by government officials—legal, medical, or *preferably* both. A medical service must take great pains not to grow into an apparently omnipotent body feared by the public and held to have interests different from theirs. You may have noticed that laymen already feel no particular enthusiasm for our innocent professional organisations, and this should be warning enough.

* * *

READER—Excuse me; my attention was wandering. Perhaps you will tell me where your family doctor comes into the picture?

AUTHOR—Our two aims are to offer personal care and scientific care. The regional services should, I suggest, make a clear distinction between their individualist practitioners on the one hand and their team workers on the other, and should regulate their work through separate committees. The team workers—i.e., in hospitals and elsewhere—would all be paid by salary, but it would be best, for the present at least, to pay the individualist family practitioner by capitation fees, provided he never has more patients than he can attend efficiently and provided supplementary or alternative work is readily available if he does not go down very well with the public. Contributions by patients for the specific purpose of securing a doctor would help to make them feel that the one they select is their own doctor, from whom they may expect personal service, as the private patient does today.

READER—Assuming all this theory is all right, how could any of it happen?

AUTHOR—If the B.M.A. has its way, and national health insurance is extended to dependants, about four-fifths of the population will come under the act, instead of the present two-fifths. The next step would be to raise the income limit by stages—those in the higher groups making correspondingly larger contributions—till everyone in the country is compulsorily insured. The insurance scheme will always be defective until it is considered natural for everyone, rich or poor, to be "on the panel"—until it becomes foolish to say "Oh, doctor, would you please treat me as a private patient." Meanwhile the administration of medical benefit could be transferred from the insurance committee to the regional medical service, which would then offer panel doctors accommodation at its hospitals and health centres and encourage their coöperation with the staffs of these units. It could also encourage them to coöperate with one another, so that all could have holidays and study leave and time for keeping fit. Private practitioners would be attracted to panel work not only by these amenities but by the provision of secretarial and other technical assistance, and above all by the possibility of doing good work in collaboration with an efficient group. I think their right to practise privately in addition would ultimately have to be abolished, because no substantial increase in the capitation fee can be made until the doctor limits himself to a known number of patients. On the other hand it would be to the interest of the regional medical service to make conditions more (not less) pleasant than those of private practice today, for its family doctors it would require men and women permanently established and capable of meeting the specialist on equal terms. There should be the least possible interference with their independence, and I don't see why the capitation fee should not rise with age and experience.

READER—Your talk about larger capitation fees is a bit unrealistic. So far we've failed to get another penny.

AUTHOR—There'd be more money if the rich were on the panel. What is possibly more necessary, however, is a change in the health insurance scheme by which contributions would be devoted solely to the provision of an adequately paid doctor, for each contributor and his family, who would be able to give them as much attention as is useful, both in health and disease. The attempt to make insurance contributions look as though they support a complete medical service endangers the quality of the more elementary care that is primarily offered. Under the B.M.A. scheme the worker's contributions give him a right to nearly all medical services except hospital care, and with *all* respect to the B.M.A. I think this may be a mistake. The family doctor may be starved at the expense of other services, and by making insurance bear a load beyond its strength they are hastening the day when the insurance principle will be found to have no real meaning and will be discarded in favour of taxation. Whereas it really *has* a useful function—namely, to make the patient feel that he is employing the practitioner of his choice. My own impression is that those who are convinced of the value of personal care would do well to concentrate, for the time being, on the improvement of the panel doctor's work—which means fewer patients and larger capitation fees.

* * *

READER—Then tell me, very briefly, how the rest of the medical services could be financed.

AUTHOR—Well, there's charity. The time is passing when hospitals can be maintained by donations and subscriptions, but money for buildings might very well be collected, I think, by a neighbourhood proud of its regional service and anxious to raise it above the standard of the rest of the country. Then there are the voluntary contributory schemes. I would have the regional services accept contributions from those willing to insure against hospital and other costs, and they could continue to charge the patient for specialist advice and hospital care when he can afford to pay. But this is really an interim policy, lasting only until the nation is educated up to payment for all medical services—except perhaps for the family doctor—out of taxation. The ruling principle should be that the sums demanded are never such as to deter the patient from seeking the help he needs. An immense number of people should, from the start, pay nothing at all, and it will not be very long before the public realises the convenience of making the state pay for the treatment of every kind of disabling illness, just as it now pays for tuberculosis, infectious diseases, venereal diseases, mental disorder and crime. Like Prof. J. S. B. Stopford, I look forward to a specific health tax, raised (like income tax) according to capacity to pay, and I would hand it over to the extragovernmental National Medical Corporation for distribution to the regional services according to the number and nature of the population and the institutions under their care. National taxation is fairer than local taxation because the poorest areas are often the ones that ought to be spending most money. "To each according to his needs, from each according to his means" is the traditional principle for financing medical care, and in a progressive society taxation will in time supplant all other methods. The public is wasting a great deal of the money it now spends on medicine and a health tax might be almost popular if it safeguarded everyone against the demands of unexpected illness.

Reader—Well, I don't like medical organisations much; but I'm glad at least to hear that you are going to allow the medical profession to manage them itself.

Author—Good heavens, I'm not. At any rate not in theory. The regional services are to be public services run by the public; and the national corporation will be their federal council. It is quite true, as the Webbs say, that "doctors have always entertained the strongest objection to anything in the nature of service under an Association of Consumers, whether governmental or voluntary." But doctors will have to lump it. You may recall that when national health insurance was first mooted the B.M.A. put up an alternative scheme to be administered by doctors (aided by clerks and auditors and the like) without representation of the community or the patients or any guarantee of adequate efficiency. This idea is partially realised in the present "public medical services" which are self-governing professional units of the same kind. But for a comprehensive national service it is nowadays out of the question: the public never will, and never should, find the money for elaborate medical services and deliver them into the full control of the doctors, nurses, pharmacists and others who work them. Who pays the piper must retain some control over the tune. Nevertheless if the public is wise it will give the maximum of freedom to its servants. There is room for one of those "typically English" compromises: the public's right to call the tune must be recognised by the doctor, in return for an understanding that he may play what he likes.

Reader—You mean simply that in technical matters the expert's decision is always final?

Author—I mean more than that. I mean that where a regional medical service has the luck to secure a man of ideas it should let him go ahead with them; it should not be afraid to give a good man a big grant to spend on his unit or hospital in his own way, as is being done, they say, in Denmark. Those who want to fight red tape, which grows in every office and institution like a weed, must be prepared to keep on cutting it; and the regional services with a reputation for using the scissors freely, and encouraging bright thoughts in all their staff from top to bottom, would secure the best men in medicine. The fact that the control of each service must be vested in a mainly lay committee does not necessarily mean that it would be vested in fools, and I expect a lot from healthy competition between regional services, and between units in those services. Competition for efficiency and new knowledge should flourish when competition for the patient's money has died a belated death.

Reader—But, talking about the dangers of central control, what about your National Medical Corporation?

Author—The unifying corporation, as I see it, would have to be particularly careful to unify only in essentials: in everything else there should be the utmost multiformity and, above all, experiment. For example, some services would appoint a director and some would not; some directors would be laymen and some would not. But a rule from which there should be *no* exceptions in any service should be that each individual and each unit has as much autonomy as can be devised. The corporation might take as watchword Sir John Tweedy's remark that any change "that restrains the liberty or lessens the responsibility of a medical man, or hampers the free play of his intellectual activities, will be detrimental to the authority and usefulness of medicine." At the same time, each unit is to work as a unit, and this will only happen if every member has a chance of influencing its policy and removing grievances. England has something to learn here from Soviet Russia, with its meetings of all the workers in each institution. The myth of the "born administrator," reigning in detachment from staff and patients, has been exposed by a previous dispenser of Grains and Scruples.

* * *

Reader (politely)—It's been very *obliging* of you to explain all this to me with such passionate armchair eloquence. But I confess I don't like all this regimentation, with patients and doctors both becoming cogs in a machine. I'm afraid you won't find me working for your millennium.

Author—Well, I'm sorry; but I fancy it's all part of a larger problem. If man is to live in a highly complex society he must constantly coöperate with others and his life must be organised; yet if he is to live at all his life must also be worth living. I'm afraid that if the doctor is to supply the most efficient service he must henceforward work with others more than he does today—must be less of an independent unit. The industrial revolution has at last reached medicine. But even for those who find themselves minor members of a group there will be compensations. If the doctor must accept some control from his colleagues and from those who organise the work he can at least be relieved of the crueller control of anxiety about money. And to give a man the means and opportunity to do the best possible work is in itself to give him a kind of liberty. Personally I don't see why the rationalisation of medicine should necessarily be regrettable; quite the contrary. The municipal hospitals of today are not the pattern for tomorrow, any more than the class of fifty wretched children struggling with a fantastic curriculum in a damp schoolroom is the last word in elementary education. We can see to it, if we like, that the future is better—much better—than the past or present. If we can get rid of the business outlook, the official outlook, the class outlook and the ultrascientific outlook, I can even imagine a time when the profession will be generally regarded with affection, and not (as now) with mingled affection and dislike. Meanwhile I have to announce, with deep thankfulness, that

Next month An Amateur Journalist will be responsible for these columns.

THE LANCET 100 YEARS AGO

April 27, 1839, p. 186.

From an article on life insurance.

For several years recently past statements of an extraordinary improvement in health and longevity of the English population have been extensively circulated and very generally credited by persons not having the opportunity of weighing the evidence adduced. . . . The erroneous impression propagated was founded upon the fact that the mortality of the total English population, without distinction of age, had diminished nearly 30 per cent in the thirty years preceding 1820. . . . From observations subsequently made and published four or five years ago, the fact was ascertained, that the diminution in the mortality of the total English population, without distinction of age, was attributable solely to the very great and unexampled diminution in the mortality of children, the mortality of adults not sensibly differing from previous estimates.

DOCTORS LIBRARY

LETTERS TO THE EDITOR

BLOOD AND VULCANITE

SIR,—Mr L G Robinson's paper on the need for coöperation between doctor and dentist and your leading article on the same subject are very much to the point and I should like to comment on the problems they raise

If statistics of toothlessness are not available it is not difficult to obtain numerical evidence of the extent to which extractions are performed To this end I examined 20 consecutive patients under forty admitted to the general surgical wards of Addenbrooke's Hospital The results were as follows —

No teeth, dentures upper and lower (ages 31, 22, 28, and 31)	4 patients
No teeth in upper or lower jaw, one complete set of dentures upper or lower	7 ,,
Gross dental sepsis, few extractions and no dentures	1 patient
Some teeth in both upper and lower jaws and efficient dentures	1 ,,
Efficient without dentures and no gross dental sepsis	7 patients

Thus 11 out of 20 had a complete set of false teeth in one jaw Although these figures are too small to be significant by themselves, in my experience they do not give a false impression of the extent to which extraction is performed among the hospital class in at any rate certain sections of the community These figures also support what might be called the "all or none law" as applied to a certain kind of dentistry—that if more than a few teeth in a jaw are decayed or septic all the teeth in that jaw are taken out, in order that a complete denture may be supplied

The removal of large numbers of teeth at one sitting, particularly if they are septic, is a dangerous operation but often appears to be carried out in a most light hearted way Often there is little if any preoperative preparation and postoperative treatment depends largely on the patient During the last five years I have treated one case of lung abscess (fatal), one of severe bronchiectasis, one of severe infective arthritis and one of infective endocarditis following mass extractions, as well as numerous cases of gastric and duodenal ulcer, cardiac weakness and congestive failure, general ill health, and psychological disorders In these extraction of many teeth at one sitting appeared to be either the sole cause of the illness or to have stirred up a hitherto quiescent focus of disease

The causes which have led to the present state of affairs are many and have been ably summed up in your leading article I am glad that you have stressed the present passive attitude to extraction A generation has grown up which sets out to have its *mouth* "cleared" with as little ado as some would *go to* have a tooth stopped Unless this attitude can be put right the beneficial effects of other reforms will be partly lost It is of first importance that people should be trained from an early age to want to keep their teeth and to prefer the real to the false

I am, Sir, yours faithfully,

LESLIE COLE

Cambridge April 22

FEMORAL HERNIOPLASTY

SIR,—Mr Cowell in the paper you published on April 8 omits any reference to A K Henry's recent valuable contribution to this subject (*Lancet*, 1936, I, 531) A highly satisfactory exposure of the femoral ring from above is obtained through a low paramedian incision after stripping back the unopened peritoneum The sac is then dislocated out of the canal and can be removed at a much higher level than is possible by the inguinal route This free exposure makes separation of the bladder and the examination and treatment of contents (adherent omentum, appendix, ovary) much easier and more satisfactory It is in the closure of the femoral ring, however, that the great advantage of this approach is seen Both Poupart's and Cooper's ligaments are very substantial structures, and when sutured together by strong silk they offer a complete barrier against recurrence This can be tested digitally at the time and the slightest pocket obliterated Through the same incision the opposite side is examined and if necessary repaired

During the last three years I have used this method in some 20 cases (4 of which were bilateral) with completely satisfactory results so far I might add that a half-Trendelenburg position of the patient aids exposure

I am, Sir, yours faithfully,

KENNETH HERITAGE

Harley Street W 1, April 20

THERAPY BY LAYMEN

SIR,—I am delighted to see that the British Medical Association has invited the coöperation of the clergy in the treatment of the psychoses and psychoneuroses This leads the way to the opening of our profession to the lay practitioner which is so desired by everyone There remains only the extension of this principle to other branches of medicine No doubt the ophthalmologists will be grateful to accept the assistance of the girls in multiple stores who so efficiently fit one with spectacles for sixpence per pair The orthopædic surgeons will find the osteopaths and chiropractors very helpful The naturopaths "successfully treat" cases of tuberculosis, diabetes, and nephritis and are not backward in showing their skill in the treatment of carcinoma In fact when one considers it there is not one branch of our profession which could not be enlarged by the admission of some lay element It is true that there is an act of Parliament which makes the treatment of venereal disease and the practice of obstetrics illegal to other than the fully qualified, but no doubt the B M A will use its great influence to have these obsolete acts repealed

The B M A committee has stated that "lay practitioners will continue to practise with or without the approval of the medical profession," and it is inexpedient that recognition should be withheld from any outsider who has had two years' training This of course holds true for other branches also It is true that the clergy have special insight into the religious backgrounds of people so they are naturally befitted for treating their minds Similarly barkeepers are given special insight into the alcoholic backgrounds of many, so they are naturally qualified to treat those suffering from chronic alcoholism Moreover, who could have a better insight into obstetrics and child guidance than the lady who tells us that she is the mother of ten (but has lost seven of them)?

The B M A has struck a great blow for medicine and has at last broken down the barriers which have separated our profession from the laymen Let us all abandon our stuck up attitude and put away our conceit Many people have had two years training in branches of our profession so naturally know more than those of us who have wasted so many years learning that which they have acquired so easily.

I am, Sir, yours faithfully,

Harley Street, W 1, April 22 CLIFFORD ALLEN.

*** The question whether mental treatment should be practised solely by doctors was debated by the National Council for Mental Hygiene last January when we commented in a leading article (Jan. 21, p 154) on the differences of opinion within the medical profession. The report of the B M A. council, to which Dr. Allen refers, may be read in last week's supplement (p 206) to the *British Medical Journal*. This report concludes with two recommendations:

Recommendation A: That the Representative Body approve the following principles —

1. No lay psychotherapist should undertake treatment unless. (i) The patient has been recommended to him by a registered medical practitioner, or has had his case investigated by such a practitioner at the request of the lay psychotherapist (ii) The lay psychotherapist has undergone a prescribed and approved course of training

2 No medical practitioner should recommend a patient to a lay psychotherapist unless: (i) The medical practitioner is himself a specialist in psychological medicine or has referred the case to such a specialist (ii) The medical practitioner has satisfied himself that the lay psychotherapist has undergone a prescribed and approved course of training

3 Where treatment is undertaken by a medical practitioner and a lay psychotherapist in coöperation, the responsibility for the case should lie with the medical practitioner and there should be consultation from time to time between the medical practitioner and the lay psychotherapist

Recommendation B. That the Representative Body express the opinion that lay psychotherapists should undergo a special training of at least two years' duration on the basis of a curriculum to be agreed upon by the responsible bodies, and that the Association take the initiative in putting machinery in motion for the establishment of approved courses of training

INTUSSUSCEPTION

SIR,—I was much interested in Mr. Ian Fraser's account of a case of recurrent intussusception, published in your issue of April 15, and in Mr. Frank Forty's letter the following week.

With regard to the lymph-glands my experience supports Mr. Forty's view that the enlargement which is such a constant feature of these cases is the result of an acute enteritis. I agree with him that caseation is not seen; nor are other signs of intra-abdominal tuberculosis except the presence of free fluid. Although I have never removed a gland for section I have frequently removed the appendix where the general condition seemed to warrant the additional procedure On the surface the appendix often appears injected and on section it has invariably shown intense lymphoid hyperplasia, the mucosa being swollen and having a mammillated appearance and the colour being a deep reddish-brown. Microscopical examination shows submucous lymphoid hyperplasia with round-celled infiltration of the other coats, especially the subserous region. The following recent case is of interest:—

A boy aged 2 was admitted to Hampstead General Hospital on April 12 with ? acute intussusception. There was a history of tuberculosis on the mother's side. One other child, aged 4, was quite well. Full-time healthy baby. Breast-fed for 2 months then fed on Nestlé's milk (condensed) until 9 months old. At this time there was a slight attack of diarrhœa; otherwise the child had been quite well until the day before admission when he had a fall whilst playing with another child who fell onto him Immediately afterwards he complained of acute pain right across the abdomen (? colic). About one hour afterwards he vomited copiously, and the pains continued until bedtime. The child slept well all night, and seemed better early in the morning, but he still had spasms of pain.

After admission he slept for an hour and did not appear to be in pain. On waking however he had an acute attack of pain and then passed a small amount of bloodstained mucus without fæcal matter He screamed a great deal after this but there was no further vomiting. On examination the child looked ill. Temperature 99·4° F., pulse-rate 125, respirations 24. An indefinite mass was palpable on a level with and slightly above and to the right of the umbilicus. The right iliac fossa felt empty. No tumour was palpable on rectal examination, but blood and mucus were present on the finger. Bile was absent. The urine contained acetone.

A diagnosis of intussusception was made and operation performed the same evening. The abdomen was opened through a right paramedian incision. The mass was found to be due to an enormous enlargement of the ileocæcal lymphatic glands, the cæcum being partly undescended. There was no sign of an intussusception nor was there any evidence that it had been present and had reduced itself spontaneously. There was no induration of the cæcal wall and apart from some free fluid there was no definite evidence of tuberculosis The appendix appeared injected and was removed and the abdomen closed without drainage. Macroscopically the appendix showed the typical appearance of lymphoid hyperplasia. The section was examined by Dr. Rickword Lane, who reported as follows: "The appendix shows marked lymphoid hyperplasia and in one or two places areas suggestive of early tuberculous foci in the germ centres. There is marked chronic inflammatory lymphocytic reaction in the subserous coat but no specific tuberculous reaction. No tubercle bacilli could be found in Ziehl-Neelsen preparations."

The child appeared fairly comfortable through the night, but vomited green fluid twice the following morning, after which there was no further vomiting. Thirty-six hours after operation he passed a small motion of normal consistency with a small amount of blood. No further attacks of pain occurred and three days later he was taking an ordinary diet and the stools were normal.

In this case, even in the absence of a palpable mass, the sudden onset and absence of bile and fæca matter were against a diagnosis of acute enterocolitis The presence of a palpable mass of glands greatly increased the difficulty. There remains the possibility of spontaneous reduction of an intussusception.

I am, Sir, yours faithfully,

Harley Street, W.1, April 24. CAMERON MACLEOD.

STERILISATION OF DRESSINGS

SIR,—The suggestion regarding the sterilisation of operation drums which was made some years ago by K. Black (*Brit med. J.* 1935, 1, 157) is not often mentioned in the literature. He advocated packing into the bundle of dressings a number of small bars of fusible metal alloy, to melt at serial temperatures—e g., 100° C, 110°, 120°, 130°, and so on, as desired. The bars of fusible alloy can be easily and cheaply compounded in any hospital workshop, and stamped with their melting temperature But of course their employment in this way does not distinguish between dry and moist heat.

I am, Sir, yours faithfully,

E. G. T. LIDDELL.

Trinity College, Oxford, April 22.

IS RADIOLOGY A SPECIALTY?

SIR,—British radiologists are trying to improve their standard of work by the introduction of higher examinations. This policy will maintain radiology as a specialty and for good or bad will influence the development of British medicine. It is thus a matter which affects us all and there should be further discussion of the pros and cons. There are two possible futures for radiology. In one, the radiologist specialises slightly on the side of diagnosis or therapy, but still attempts to cover the whole field to some extent. In the other, he specialises on therapy and general supervision, and leaves diagnosis to specialist consultants and technicians.

The standard of radiographical technicians is high. Many are capable of further responsibility, and with modern improvements in simplicity and reliability of equipment it is increasingly difficult to argue that any great disadvantages would result if consultant and technician came into direct contact without intermediation by the radiologist. At present, for instance, routine films to exclude bony injury after accident form much of the private work of the ordinary radiologist. Such films must be expensive and their high cost is an embarrassment to the general practitioner, who in some cases could take the responsibility for interpretation himself, and in others would like to refer the matter to a bone surgeon, but is deterred by the inability of his patient to afford fees for two consultants. In large hospitals it is still harder to justify the full-time radiologist. Dental films can go straight to the dentist, joint films to the consultants interested in orthopædics and rheumatism, sinus films to the E N T man, and urogenital and neurological work to other specialists. In medicine the defects of the present system are also apparent. The interpretation of lung films and decisions as to further procedure are often difficult, but nothing is gained by radiologists reporting "increased root shadows" or "greater density at one apex." A better decision is reached if the general physician can consult someone who devotes most of his time to lung cases and does his own screening. To deprive the chest specialist of the chance of doing his own screening and to introduce a third person into the consultation is not in the interests of the patient or of the advance of medicine.

In heart cases the doctor who screens a dozen patients in succession, at the end of his outpatients, with the clinical details fresh in his memory, is more efficient than the combination of radiologist inexperienced in hearts with clinician ignorant of radiology. In the abdomen lack of coördination leads to frank disaster. Good diagnosis depends on the examination being made at the right time, in the right psychological atmosphere, often after a period of diet or with the aid of drugs. These considerations are satisfied if the gastro-enterologist does his own radiology, but not if the radiologist sees the patient for the first time with goggles on or in a dark room, or if he is unable to adapt his routine to the particular case because adequate clinical details are not available. The differential diagnosis between duodenal erosions and anterior and posterior wall ulcers is often impossible in an acutely tender patient with a stomach full of secretion, and early colonic neoplasms are much harder to find if the colon is irritable from previous abuse of purgatives.

In short, under the present system apparatus and technical skill are not being used to their best advantage. The result is that costs are too high, patients fail to get the best possible diagnosis, and consultants are not learning as much as they should about the conditions which they treat. An X-ray department is no place for amateurs, but it is possible for the specialist consultant to learn sufficient about radiology to look after apparatus, patients and co-workers. Whereas it is not possible for the average radiologist to keep abreast of the entire field of medical and surgical diagnosis, especially if he works for clinicians whose ignorance of radiology doubles his technical difficulties.

I am, Sir, yours faithfully,

Oxford, April 25. DENYS JENNINGS.

P.S.—A foreign doctor told me recently that the most ridiculous thing about our medical education was that the average student knew more about microscope slides made from dead bodies than X-ray films made on living. Was he right?

MEDICINES AND THE BUDGET

SIR,—At a loss to the revenue of approximately £¾ million—a drop in a big bucket—the Chancellor of the Exchequer proposes to liberate the medicine trade from the slight restrictions which a small vendor's duty and a small sales tax entail. Thus it is proposed to sacrifice the principle, which has been embodied in the English code since 1783, that the public should purchase its self-prescribed medicine from trained vendors. Why? Two years ago a departmental committee recommended that the sale of medicines should be taxed by an additional £3¼ million. Why are the recommendations of a committee, which took its task so seriously and was so laborious in its inquisitions, so flouted?

I am, Sir, yours faithfully,

Whitehall Place, S.W.1, April 25. F. C. GOODALL.

MENTAL NURSING

SIR,—The use by two of your correspondents of the term "refractory" ward, a term reminiscent of past penal methods but scarcely suited to modern ideas as expressed in the recent Criminal Justice Bill, still less for procedure associated with mental treatment, appears to me a very good argument for the introduction of some course of simple psychology for nurses, which I advocated in the letter which initiated this correspondence. Such a course should, in spite of Dr. Pilkington's fears, be of value to the nurse since it should deal with the relationship between individuals and show how natural tendencies and reactions, exaggerated in the mentally ill, should be met by nurses in the course of their duties. Such teaching would, I hope, eliminate the use of such condemnatory expressions as "refractory" and to my mind the consequent continuance of "man-handling patients by the methods of former days," to quote Dr. Spencer.

I do not see such practices here nor do I believe them to exist generally. We, however, speak of disturbed patients and disturbed wards. May I quote from my book "Practical Psychology for Nurses": "'Refractory' implies rebellion and the necessity for putting the rebellion down—placing the patient in an inferior position—but we have seen that it is just this intense feeling of inferiority which has by over-compensation provoked the rebellion, so that in using such terms our method is illogical."

A patient's testimony written after discharge following a five months' stay will possibly be more convincing. He writes: "I am afraid that at times I was a most difficult patient and it is a great wonder to me how well all members of the male staff maintain so kindly and tolerant a discipline amongst all sorts of men. If the younger members of the staff can maintain the same kindly, tolerant and yet firm control, retain a sense of humour as exampled by the many fine charge nurses they will indeed become men of dignity and character and carry on a very fine tradition."

I believe the early training in applied psychology is in part responsible for this. It seems to be agreed that some such course is needed and this should, I think, be officially recognised.

I am, Sir, yours faithfully,

W. J. T KIMBER,
Medical Director, Hill End Hospital and Clinic.
St. Albans, Herts, April 24

THE ART AND THE SCIENCE

SIR,—The annotation under this heading in your last issue encourages me to enter the lists again, this time with a rebated spear-point. There is general agreement that life is short and the art is long to learn. Hippocrates, Seneca, Cicero, Chaucer, Tristram Shandy's father and finally your annotator all said so. "It is, after all, a question of time," he adds; and since at present the clinical scientist has to be steeped in the art, "it cannot be surprising if clinical research has few votaries" If only the powers that be realised that truth and acted upon it! But worse still is the undoubted fact that the present curriculum does not even provide an education designed to meet the needs of the general practitioner. If a boy wants to become a journalist, he is not apprenticed in turn to a paper-manufacturer, a calligrapher, a printer, a publisher and a newsvendor before he starts his profession; a would-be cobbler is not apprenticed to a farmer, a tanner, a seamstress, an orthopædist and a professional walker before he starts to make boots But future G P.s are apprenticed to an imposing array of specialists, each of whom is thoroughly convinced of the importance of his own subject in itself Lord Horder (p 916 of your issue) desires "a joint committee of all teachers interested" to decide which preclinical subjects should be curtailed; Prof Witts believes that "the only Curriculum Committee which will be of any value will be composed of non-medical people." As usual, the G.P. is forgotten, and yet it is primarily for him that the curriculum is "designed" (one can scarcely speak of design in connexion with the present amorphous structure). I venture to quote again Sir James Mackenzie's sound criticism that "the General Practitioner who has suffered from a defective medical education is seldom consulted in educational matters" All the committees on reform of the curriculum are agreed that changes must be made But it is useless to go on repairing an out-of-date structure, dropping a brick here and there and adding a great many more at weak points; it is more than time that the whole curriculum was pulled down and rebuilt on sound lines.

But if the training of clinical scientists is to diverge from that of G.P s at some stage before qualification, they must be selected early Your annotator is surprised that I "did not at once invite Prof Witts to define the stage of mental growth at which one can diagnose the mental researcher" The reason is simple Prof Witts believed that they could not be picked out at the end of their third year at the university. I expressed surprise at this, believing "that they are m[illegible]sily diagnosed after three years at the Univ[illegible]han when they have spent three years at a Hospital." If they could not be diagnosed at the age of 21 or 22, although "research workers are born and not made," it mattered little to me at what stage Prof. Witts could select them: the parting of the educational ways would have been reached But any college tutor, and any professor of "preclinical" subjects, can select promising research workers from amongst his pupils reading "physiology finals" I understand that the main delight of tutoring lies in finding students who are keen to examine physiological precepts critically and to test them on themselves; a pin, a watch and a handkerchief (to occlude the circulation to a limb) are the main pieces of apparatus, although the simple instruments which Lord Horder believes are foreign to the physiological student are included But at a hospital, with little time and other people's pathological bodies at his disposal, the student has scant opportunity of showing ability for research until he is qualified Surely, therefore, future research workers can be selected more easily when they are third-year undergraduates! And this is not a particularly early age for them to decide whether they wish to become primarily G P.s or scientists; it is at least three years after they have chosen whether they want to be doctors or soldiers, journalists or cobblers As Anatole France said, "*the faculty of doubting is rare among men; a few choice spirits carry the germs of it in them, but these do not develop without training*" If research students can be selected early, it is surely not unreasonable that they be provided with a training that is relevant.

I am, Sir, yours faithfully,

Oxford, April 22. "PETER SHAW."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 15, 1939

Notifications—The following cases of infectious disease were notified during the week: Smallpox, 0, scarlet fever, 1700; diphtheria, 845; enteric fever, 11 (25 "expected"); pneumonia (primary or influenzal), 1304; puerperal pyrexia, 231; cerebrospinal fever, 34; acute poliomyelitis, 3; acute polioencephalitis, 1; encephalitis lethargica, 3; dysentery, 18; ophthalmia neonatorum, 86. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 21 was 3228, which included Scarlet fever, 616, diphtheria, 618 (carriers, 37), measles, 7, whooping-cough, 997, puerperal fever, 20 mothers (plus 13 babies), encephalitis lethargica, 304, poliomyelitis, 3 At St Margaret's Hospital there were 23 babies (plus 13 mothers) with ophthalmia neonatorum

Deaths—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 9 (0) from measles, 2 (1) from scarlet fever, 21 (3) from whooping-cough, 20 (1) from diphtheria, 63 (9) from diarrhœa and enteritis under two years, and 127 (18) from influenza The figures in parentheses are those for London itself.

Hull reported the only death from typhoid West Bromwich had 3 deaths from measles, Liverpool 2 from whooping-cough Fatal cases of diphtheria were scattered over 18 great towns, Birmingham and Grimsby each reporting 2 Birmingham had 12 deaths from influenza, Liverpool, Walsall, and Swansea each 6, no other great town more than 4 *Diarrhœa* was fatal to 13 infants in Birmingham, 4 each in Liverpool and Middlesbrough

The number of stillbirths notified during the week was 235 (corresponding to a rate of 37 per 1000 total births), including 35 in London.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M P

LAST week in Parliament was very much a medical week, we reassembled on Tuesday and had before us the "Motion made and Question proposed" relating to civil estimates and estimates for revenue departments The business was the consideration of the proposal "That a sum not exceeding £313,309 be granted to His Majesty " On this the Question was put "That Mr Speaker do now leave the chair" But what by Hippocrates has that got to do with medical affairs? Just this—it is the procedure by which the House of Commons is able to discuss any business it wishes to discuss and which is related in some degree, often not at all a close degree, to the estimate concerned In connexion with these debates on supply which recur every year it is the Parliamentary custom for private members to ballot for the privilege of introducing any relevant motion and to have it discussed as the substantial business of the sitting The member lucky in the ballot for Tuesday was Sir Francis Fremantle Sir Francis was a member of the Inter Departmental Committee on Nursing Services which recently presented an interim report In view of the fact that this interim report covers the major matters under consideration both Sir Francis Fremantle and Miss Megan Lloyd George, also a member of the committee, were able to take part in the debate with freedom The admirable general review of the position of the nursing services made by Sir Francis showed that while 12,000 nurses enter the nursing profession now some 8000 more were, under existing conditions, required to fulfil today's requirements To get this number it was essential to consider all the possibilities of recruitment

The debate revealed a general agreement on the need for improvement of conditions Nurses are badly underpaid, pensions unsatisfactory for some classes non existent *Unreasonable hospital rules* and restrictions on the personal freedom had an adverse effect on recruitment But things were improving and the L C C hospital service was praised for its enlightened reforms But when everything has been done to remove the shackles of old habit and custom the problem still remains big Undoubtedly there still exists the feeling referred to by Mr C G Ammon, speaking for the front bench of the Labour Party, when he said that nursing was one of the things described as "the Lord's work" and by some odd twist of thought underpaid in consequence It became clear in the debate that possible recruitment from the secondary and higher grade schools was inadequate, as it was from these schools that teachers, doctors, lawyers, secretaries and all the professional classes generally were taken It was therefore from elementary schoolgirls that the bigger supply must come, and here a great difficulty showed *itself* Under the new education arrangements the school leaving age is raised to 15 But between 15 and 18 there is a gap of three years very difficult to bridge It was proposed to help in this way by providing facilities for evening study by girls who are *self supporting* in the day It seems however quite clear that if the nursing profession is to get all the recruits it wants it will be necessary to institute special courses of technical training with adequate maintenance grants between 15 and 18 To do otherwise is to throw a severe physical strain on prospective nurses in the most important 15 to 18 period This is all the more true because the number of 20,000 recruits a year required at present but not reached is by no means the high mark of requirements It is more likely to be only a beginning And in war time, Mr Elliot said, the Government would need 100,000 auxiliary nurses An undercurrent of the debate showed members' minds perturbed about the standard of nurses' education It was felt to be desirable that all nurses should be of a high educational standard and undesirable that there should be the need for recognising any standard of education and training below what should be the normal level of the well-educated and well trained nurse

* * *

On Thursday the House turned from nursing services to the Camps Bill Many have urged for many years that holiday camps for school children should be made available by Government organisation Existing holiday camps for adults and children are numerous but they are too expensive for the poorer elementary school children who most need them The condition of subacute crisis or emergency in which we now live has had as one of its exacerbations the bill to provide camps in permanent hutments for school children's holidays in peace and for school children's evacuation in war It is true that only 50 camps are being provided and that they will only take a few thousand children out of the multitudinous thousands upon thousands who will require country hospitality in time of war But it is at least a beginning and if the camps are built with water-supply, drainage and cooking arrangements on a scale which would allow large tent expansion in emergency then 4, 5 or even 10 times the peace time number might be accommodated The Government envisaged only a two fold increase of the camps There are to be camps in England and Scotland and probably in Wales and grave fears were expressed on all sides of the House as to the possible disfigurement of the countryside which might result unless the siting and building of the camps were very carefully planned so as to preserve rural amenities The Government spokesman tried to allay these fears but they were not very successful although the Labour protest was crushed by the voting machine 221 to 110—mostly of course people who had not heard the debate but just came in to walk through the division *lobbies*

FROM THE PRESS GALLERY

The Supply of Nurses

IN the House of Commons on April 18 Sir FRANCIS FREMANTLE moved:—

> That this House, taking note of the Report of the Inter Departmental Committee on Nursing Services recognises the inadequate supply of nurses to meet the increasing demand for their services and the urgent need of reform in their training, registration, and conditions of service both for institutional and domiciliary nursing

He said that nursing was no longer merely a personal service, it served a national need There was a rising storm of complaints which showed instances, all too frequent if not general of nurses being overworked and under-paid of excessive discipline and restrictions and inferior accommodation, while at the end of a life's service nurses might not be able to get the pensions to which they started to contribute In 1932 was published the very well informed report of THE LANCET Commission, which resulted in many of the improvements which had taken place. Last year they had the report of the Alness committee in Scotland, and in January of this year they had an interim report from the Athlone committee for England and Wales. Roughly speaking, the number of nurses on the general part of the register alone was 74,000 and there was a total of 90,000 on the general and the supplementary registers.

REASONS FOR INCREASED DEMAND

During the past 12 years the numbers entering for the preliminary state examination had increased from less than 6000 to nearly 10,000, and the numbers entering for the final examination had increased by something like 100 per cent. From 25 to 35 per cent of the probationers fell out in the first year Therefore recruitment even at the present rate required not only the 9000 who entered for the final examination but the 3000 who had dropped out on the way—that is, 12,000 entrants. Examples of the shortage were that in December, 1937, the London County Council in their general hospitals, with an establishment of nearly 7000 nurses, had 611 vacancies for staff nurses. A quarter of the authorised posts for female nurses in the Surrey County Council were unfilled. Most hospitals and institutions reported similar difficulties. The increased demand for nurses arose from various factors. In the first instance the number of beds in voluntary hospitals had increased by 1500 in recent years, requiring the service of 500 extra nurses a year. Secondly, under the Local Government Act, 1929, the poor-law institutions had been turned into well-run and equipped municipal hospitals with a corresponding increase of staff. Thirdly, the increased need for nurses came from the growing public demand for hospital treatment in acute sickness. Fourthly, there was an increased demand for domiciliary nursing, whether under an authority or under the Queen's Institute of District Nursing, or in private homes The fifth factor in the increased demand for nurses was the development of medical technique. Lastly, there had been greater efforts in recent years by hospital authorities to reduce the hours of nurses and this had also led to increased staffs According to the report of the Athlone committee the 96-hour fortnight, apart from everything else, called for a 20 to 30 per cent. increase in establishment. Sir Francis estimated that another 8000 entrants a year were required—that is, 20,000 in all—apart from future expansion of needs

AND FOR THE FAILURE OF SUPPLY

Dealing with possible additional sources of recruitment Sir Francis said that lowering the age of admission below 18 was in general deprecated by the Athlone committee. The secondary schools might produce a larger source of supply when conditions were improved, but not anything like the large number required. Enlistment of girls from elementary schools meant filling the gap between the leaving age of 15 and the ages of 18 or 19. The first hurdle which entrants had to leap was their acceptance at an approved training school and a test examination if they had not the school certificate. The second hurdle was the preliminary state examination which was to be divided into two parts; courses were to be arranged under the local authorities so that girls could take the first part (anatomy, physiology, and hygiene) before starting work in hospitals and thus to some extent fill the gap. The second part of the preliminary state examination was on the practice of nursing learned in the hospital wards An attempt should be made to avoid giving rather wearying instruction to tired nurses after a hard day's work. The third and more important hurdle was the final examination of which there had been much criticism. Some women who were very suited for nursing could not pass examinations. Many statements that had been made on conditions of the nursing service were exaggerated or quite unjustified; great improvements had taken place in the last few years. There was clear evidence however that together with the poor financial prospects the long hours of work were the chief factor in the problem of recruiting. A 96-hour fortnight would be a pretty heavy tax in itself, but it was the utmost improvement they could look for. That was exclusive of meals, but must include compulsory lectures. The nursing profession almost without exception was opposed to a limitation of hours by statute. It would be better to deal with the question by a system of public grants conditional on reasonable hours being worked by nurses. Off-duty periods and annual holidays ought also to be taken into account. Nursing was the only profession in which the principle of the maximum salary being more important than the minimum was ignored The salaries of nurses in the higher grades, their position in regard to pensions, and in some places accommodation, required attention. If nurses were allowed to live out very careful regulations would have to be made so as not to interfere with the efficiency of their work. Unreasonable discipline and restrictions had a deplorable effect on recruiting. In conclusion Sir Francis acknowledged the debt which the country and the nursing profession owed to the General Nursing Council who, he said, had with admirable statesmanship formed the profession into a homogeneous whole in its early days of state recognition. The nursing profession were the inheritors of a great tradition. Too long their goodwill had been traded upon, and it was the duty, desire, and determination of the nation to give them the conditions essential for their service under the changed conditions of today.

HOURS AND PENSIONS

Colonel PONSONBY, who seconded the resolution, said that he thought that those interested in the recruitment of nurses might emphasise too much the question of conditions. Recently when a lady of eminence in the nursing profession lectured to the girls of Roedean School, and spoke of the improvement of conditions, the girls told her that they wanted to know about patients and how to nurse them If nurses' hours were reduced to 96 per fortnight that change in the case of the London Hospital would necessitate 5 extra staff nurses, 10 fourth-year probationers on ward duty, and 90 other probationers. That would eventually mean 105 extra nurses to be added to a staff of 490 The cost, assuming that salaries and cost of food and maintenance remained as they were at present, would be about £11,500 apart from the extra accommodation required He pleaded for a system of interchangeability with regard to nurses' pension rights. If the nursing service was to be national it was essential that the superannuation scheme should be national also. Something ought to be done in regard to the large number of assistant nurses who were not controlled in any way. Many of these assistant nurses were quite competent for hospital or domiciliary nursing, but others were completely untrained and unsuitable. As long as they were working under a matron in a hospital they might to some extent be supervised, but they were dangerous in private nursing. Some protection should be given to the state-registered nurses and the public, and a roll of assistant nurses with two years' training had been proposed to this end.

Mr. FRANKEL, speaking as one who is partly responsible for the London County Council nursing service, said they had experienced no material shortage in probationers; the real shortage was in trained staff. They found that after four years' training many nurses left the service and they had to consider whether the conditions and salaries were good enough to retain them. It was a lamentable fact that after leaving the L.C.C. hospitals nurses might come back a few weeks later from the nursing agencies at four guineas a week The London County Council were doing their best to solve the problems of their nursing service, and he believed that in some hospitals they had done so. They had removed many of the restrictions on the freedom of the trained nurse He was still in favour of residential service for nurses The L C C, had anticipated the report of the Athlone committee A year ago they introduced the principle of the 48-hour week or the 96-hour fortnight This had involved considerable extra expense for which the council did not get one penny of grant He hoped that the Government would help those local authorities who were trying to meet the difficulties associated with the provision of an adequate supply of nurses

VIEWS OF THREE WOMEN MEMBERS

Miss LLOYD GEORGE, who was one of the lay members of the Athlone committee, said that she hoped that the Government would not await the publication of the full report before they implemented some of the unanimous recommendations Evidence submitted to the committee showed that conditions still existed in the hospitals which would not be tolerated in most occupations open to educated women But though it was true that nineteenth-century restrictions deterred twentieth century girls from joining the nursing profession she believed that on the whole these restrictions formed but a small part of the problem The two principal factors were long hours and low salaries She saw difficulties in the way of the proposal that the public grants which were to be given to hospitals towards the carrying out of certain reforms, especially the reduction of nurses' hours, should be made conditional on such reforms being actually instituted On the other hand, if the Ministry of Health had no coercive powers then the proposal was a dead letter For that reason five members of the committee did not think it would be possible to reduce hours without legislation She hoped that the Minister would set up as soon as possible a salaries committee representative of nurses and employers to negotiate standards of salaries The necessary reforms could only be carried out by the hospitals with the assistance of public money, and this would involve a measure of public control

Mrs TATE did not regard present conditions satisfactory, either from the point of view of the nurses or the patients It was not only a question of the nursing cooperations In many nursing-homes the conditions were unhygienic and the patient had no guarantee that the nurse in charge was really trained and competent She agreed with Miss Lloyd George that the proposal that grants should be made to hospitals to enable them to institute the 96-hour fortnight was a dangerous one She did not see why grants should be given to voluntary hospitals for this one thing only

She felt that it would not be possible in the future to maintain voluntary hospitals in this country, much as she regretted it from many points of view A larger number of women would enter and remain in the nursing profession if there were better opportunities and pay for them when they were trained She regarded the suggestion that assistant nurses should be registered for general nursing as very detrimental to the nursing profession and to the general public She did not think that they would improve the status of nurses by registering untrained women

Dr EDITH SUMMERSKILL said she was surprised to hear Colonel Ponsonby say that they should not stress the conditions of nurses Girls who did not want to hear about the conditions but only about the work were supernatural or took only an objective rather than a subjective interest in the life of nurses One of the most important recommendations of the Athlone committee was that the nurses should be allowed to live out The rule that nurses had to resign on marriage was a stupid waste of excellent material There was some misapprehension on the question of assistant nurses, the object of the recommendation of the Athlone committee was to include such women, after they had had two years' training, on a roll and she welcomed this recommendation Many of these women were without the intellectual equipment of those who could pass state examinations but had kindliness, sympathy, and understanding She hoped that the Minister of Health would be able to arrive at some amicable arrangement by which the two grades of nurses would be able to work together She pressed the Minister to see that adequate protection was given to nurses in the event of the outbreak of war

OTHER REPRESENTATIVE VIEWS

Mr LIDDALL said that the nursing problem would not be satisfactorily solved until there was a complete overhaul of existing machinery Ridiculous examination tests should be abolished, probationers should be better paid, examination fees should be reduced and there should be less control of nurses' dress when off-duty

Sir E GRAHAM-LITTLE said he did not think that sufficient attention had been paid to the change which had taken place in the last 30 years in the whole aspect of the nursing profession. The education of the nurse had been more efficiently carried out in the voluntary hospitals than anywhere else There had been great improvements in the housing and other amenities for nurses In London during the last ten years more than £500,000 was spent by voluntary hospitals on buildings for nurses' homes and £27,000 on equipment and large sums also in the provinces, Scotland and Ireland Much harm had been done to the recruitment of nurses by the fallacious statements sometimes made about the under-payment of the nursing profession The nurse probationer was taught her profession and all the time was paid quite reasonably The voluntary hospitals were aggrieved because municipal hospitals paid far more money to probationers than the voluntary hospitals, but notwithstanding that fact there had been no dearth of applications at the voluntary hospitals

Mr TOMKINSON said that conclusions could not be drawn from the experience of some voluntary hospitals The general problem could only be solved by making it practicable for the child of the working man as well as for the secondary schoolgirl to enter the profession

Captain ELLISTON said that they had to recognise that recruiting for the nursing service had broken down It was notorious that the hospitals were at their wits' end to get applicants for vacant posts Many senior nurses in our great hospitals were still less well paid than domestic servants Adequate salaries should be paid, standard hours of employment should be adopted, and nursing be made a pensionable service so that it offered opportunities comparable with the other occupations which now attracted educated women; also the increase of salaries and of staffs would mean expenditure which few hospitals could face, but the parents of probationers might be quite willing to pay something towards the cost of training If nursing was a national service surely the extra expenses should be a national charge He could see no excuse for excluding local authorities from the grant offered to voluntary hospitals The proposal for a roll of assistant nurses seemed to him an advantage to the women themselves and also a protection to the public

Mr LEE said those who had been engaged in the administration of municipal hospitals since the passing of the Local Government Act of 1929 knew how serious a problem the provision of a supply of nurses was He hoped that measures would be taken to offer inducements to girls from working-class and lower middle-class families to train as nurses The reforms advocated by the committee were of vital urgency

Mr BROOKE said that the South Eastern Hospital for Children in his constituency had had to close two of its wards owing to the shortage of nurses He hoped that the Athlone committee would obtain special evidence from children's hospitals, which had some distinctive problems The deliberate training and certifying of different grades of nurses seemed to him essential He wished that the committee had recommended the immediate abolition of the test examination, which was turning away girls who would make good nurses. He quoted from the report of THE LANCET Commission in regard to the bad effect of damping curiosity and initiative on the part of the nurse; this was still being done in some hospitals. The recommendation of that commission seven years ago on securing interchangeability of pensions had not yet been acted upon. The Minister might consider the desirability of appointing a standing committee on the supply and training of nurses if the nursing profession could not solve the difficulties unaided.

Mr. AMMON said that more and more the nation was being pushed towards a state hospital service. In answer to a question he said that three-quarters of the L.C.C. hospitals had adopted the 96-hour fortnight. He hoped that the Minister would tell the House that the Government were prepared to go full-speed ahead in carrying out the recommendations of the committee's report. Apart from the normal demands of hospital treatment they had to bear in mind the need of greater haste to provide for the possibility of a war emergency.

THE MINISTER'S REPLY

Mr. ELLIOT, Minister of Health, said that the Government did not intend deferring all action until the final report of the Athlone committee had been delivered. All the reports on the nursing profession had laid stress on its special value to the community, and had maintained that the nurse's devotion to duty should be adequately rewarded not only by proper remuneration but by proper conditions of service.

The Government accepted these general conclusions They recognised the high value of the nursing profession to the nation and the importance of the suggestions made. The demand for hospital accommodation was growing throughout the country and had not yet by any means reached the end of its growth. People were more ready, indeed more anxious, than they were to take advantage of hospital facilities New services of many kinds were now finding their place in our hospitals and were rapidly developing. All this had increased the demand for nurses out of proportion to the actual increase of beds Better service was being demanded and more specialised services were coming very rapidly into being—for example, orthopædics was of special importance They were on the eve of a great development in the treatment of fractures: no service could be more useful to the nation than the rehabilitation of the injured and no service would require more specially skilled nursing attention. The shortage of nurses arose from the increased demand, and not from any falling off in the numbers of entrants to the profession. In England and Wales the numbers who entered for the final state examination rose from 5275 in 1927 to 9516 in 1937. In Scotland the increase was not so striking but the number of nurses registered in 1928 in that country was 800 and, in 1937, 1092. Roughly the number of entrants for the final examination in Great Britain had risen in ten years from 6000 to 10,000. The shortage was not primarily due to slackness, or to the drag of more and better-paid occupations. The increases, however, had not been great enough.

Present methods of recruitment were ill-fitted to the educational system of the country. An unfortunate gap existed between the school-leaving age and the age of entry into hospital. The Board of Education and the Department of Education for Scotland were sympathetically considering how best to organise arrangements to provide the most preliminary training both for girls from elementary and secondary schools. The General Nursing Council had submitted a rule to him to enable a "splitting" of the examination to take place, and it was proposed to approve the rule. This "splitting" had already been effected in Scotland. The Athlone and the Alness committees differed on the propriety of establishing a roll of assistant nurses. On this matter the Secretary of State for Scotland desired to gather opinion. In any case, if a roll of assistant nurses were determined on legislation would be necessary.

Many of the accusations in regard to conditions of service were exaggerated, but there was still scope for improvement. But it should be remembered that in spite of those conditions recruitment had increased over 50 per cent. in ten years. There was a great deal to be said on the credit side—for example, in the provision of new accommodation by both municipal and voluntary hospitals The Government were prepared to accept the view expressed by the Athlone and Alness committees that the conditions of service of the nursing profession so far as they affected discipline, leave, and amenities, should be based "on the conception of a nurse as a reasonable adult anxious to live up to the high traditions of service for which the nursing profession in this country is justly famous." A circular would be issued to local authorities on the numerous administrative recommendations He proposed to ask the British Hospitals Association to issue a circular in similar terms to the voluntary hospitals. The question of establishing Whitley Council procedure for nurses was under consideration by the Ministry of Labour. The Government were giving very careful consideration to the financial recommendations and it would be possible to say more about this matter at a reasonably early date.

NURSING IN EMERGENCY

He wished to speak on the effect on these matters of the danger of war. In round figures 200,000 hospital beds would be available in the first 24 hours in the event of war. These were in existing hospitals for which nursing staff was for the most part already provided. One hundred thousand additional beds were to be placed in existing hospitals, &c, for which staff was not at present provided, and in addition a block of 26,000 beds in hutted annexes had already been arranged This was only a first step, but the total of beds in sight for which staff would have to be provided was already something like 120,000. At one nurse to three patients, the staff required for this programme alone was 40,000 nurses and nursing auxiliaries. Nurses and auxiliaries were also needed for first-aid posts, for helping the health visitors, for helping the district nurses, and for helping to look after those millions, children and others, who were being evacuated from the congested areas into the reception areas.

They were therefore asking, for the nursing and nursing auxiliary services, for 100,000 volunteers from Britain, not only from the towns but from the country places They wanted the big organised units of industry, such as the big shops and stores, to give facilities to their staffs for training. Local authorities had power to incur any reasonable expenditure on such training, and no expense need fall upon the recruit. The cost of training in hospital would be paid for by the Government

The national organisations through which training could be given were set out in the National Service Handbook. Names would be registered with the central and local emergency nursing committees. He appealed to retired trained nurses to continue to come forward and register. They had already a substantial recruitment, including some 11,000 St John and St. Andrew's and Red Cross enrolled and trained personnel; some 12,000 women had enrolled with the Central Emergency Committee, of whom 5000 were fully trained nurses and some 7000 untrained enrolled through other organisations These 7000 young women were now beginning or carrying through their training (or in some cases had completed it) and were working to a single unified scheme for qualification as nursing auxiliaries. But many more yet were required. He could assure Dr. Summerskill that the Government scheme for A.R.P. in connexion with hospitals applied to protection for the staffs as well as for the patients.

Sir F. Fremantle withdrew his amendment.

Conscription

In the House of Commons on Wednesday afternoon the Prime Minister stated the decision of the Government to introduce at once a bill to authorise the *calling-up of any class or description of reserve* and auxiliary forces Next week, he said, he proposed to introduce a Military Training Bill giving power to call up for military training men aged 20 and 21 These would receive six months' training, after which they would join either the Territorial Army, for 3½ years, or the special reserve Provision would be made for men to anticipate or postpone their calling-up for a specified period, and tribunals would be set up to consider the exemption of conscientious objectors on condition that they undertook work of national importance. The gross number of men to be called up yearly, ignoring exemptions, would be 310,000 Mr Chamberlain maintained that the introduction *of these measures leaves the voluntary system as the* basis of the three defence services

The Budget

In the House of Commons on April 25 Sir JOHN SIMON, Chancellor of the Exchequer, introduced his Budget In the course of his speech he said that there was a troublesome question of long standing, to which he proposed to give a final quietus It was that of the medicine stamp duties These duties had a long history and the present law, which mainly dated back to 1812, had been described by a learned judge as a mass of confused and obsolete verbiage in which it was often difficult to decide which medicines were liable to duty and which were exempt He might illustrate the archaic character of the legislation by quoting one of the exemptions which still *applied on the statute book today* The exemption from duty extended to all drugs named and contained in the book of rates subscribed with the name of Sir Harbottle Grimston, Baronet, mentioned and referred to in the Act of Tonnage and Poundage made in the twelfth year of the reign of King Charles II These were rather archaic duties, therefore, as he thought he had established A select committee of the House of Commons exhaustively examined the subject and produced a new scheme in which the main test of liability of medicine for taxation would be whether it was advertised or recommended in some form or other, but that tax, as it seemed to him, did not serve to relieve from tax all medicines of healing value Even with the exemptions which the select committee proposed, a large number of genuine medicines would be brought under taxation He had received many representations as to the objections to which a tax on these lines would be open and it must be admitted that there would be real difficulties administratively He had therefore reached the conclusion that the only satisfactory solution was to repeal the tax entirely, and he proposed to repeal the duty and the concomitant licence duty of 5s payable by medicine vendors as from Sept 2 next He suggested that date because, firstly, the licence normally ran till Sept 1, and it was desirable that the duty and licences should terminate on the same date, secondly it would give ample opportunity to the majority of the interests concerned to dispose of their stocks and adjust their prices to the new conditions The cost would be £590,000 this year, and £770,000 in a full year

To balance the loss of revenue from the Medicine Stamp Duties he proposed to put an excise duty on photographic films and plates manufactured in the United Kingdom of 1½d per sq ft. That would be the equivalent of about 2d on the most popular size of roll film commonly used by amateur photographers X-ray films and dental films used for medical and scientific purposes would be exempt from any duty

Dealing with the additional revenue to be raised, Sir J Simon said that it was necessary to raise the revenue from about £918 000,000 to about £912,000,000 Borrowed money for defence purposes produced £380,000,000 Measures introduced in recent years to prevent tax avoidance had checked abuses to a considerable extent Further devices however had been invented and fresh provisions would be introduced this year dealing with surtax and estate duty These would be retrospective in effect Income-tax would not be increased, from the present rate of 5s 6d in the £, to avoid any depressing effect on industry The motor licence duty on private cars would be raised as from Jan 1, 1940, to 25s per horse power The motor-cycle duty would be correspondingly raised A surcharge would be imposed of a further 5 per cent in the rates of *surtax applying to all slices of income up to £8,000* and a further 10 per cent increase of rates in respect of all incomes in excess of a total income of £8000 These increases would mean that the peak rate of income tax and surtax would be *14s 6d* in the £ There would be a surcharge of 10 per cent on existing duty on estates exceeding £50,000 The tobacco *duty would be raised as from* April 26 by *2s per lb* This increased the present rate of tax of *9s 6d* per lb to *11s 6d* per lb The present duty of *9s 4d* per cwt on sugar would be increased by *2s 4d* per cwt—i e, by *¼d* per lb The final Budget balance showed a revenue on the existing basis of £918,330,000 and the revenue, after taking account of the new taxation, would be £912,600,000 With an estimated expenditure of £912,444,000 this meant an estimated surplus of £156 000

Control of Casualty Services

In the House of Commons on April 24, when the Civil Defence Bill was considered in Committee, Dr HADEN GUEST moved an amendment to leave out the subsection that permits the Lord Privy Seal to transfer any of the functions to another minister Dr Guest explained that his object was to secure unified control of the civil defence services The present division of functions between the Lord Privy Seal, the Minister of Health, and the Minister of Transport led, he said, to a certain amount of disunity Serious conflict was arising in the organisation of the casualty services and it was vital that they should be coördinated At present air-raid posts were under the Ministry of Health, stretcher bearers under the Lord Privy Seal, and ambulances under the Minister of Transport It was the opinion of the medical officers of health of the metropolitan boroughs that under the present system of recruitment, training, and conditions of service the efficient functioning of the casualty services either in peace or war was impracticable It might be advisable to set up an advisory council or board, but it was essential that there should be unity of command

Sir J ANDERSON, Lord Privy Seal, said the subsection was necessary for two reasons (1) to regularise what had already been done and (2) to provide for future contingencies He was now responsible for all matters of policy in connexion with civil defence but if the work was to be done in a reasonable time the burden must be spread In regard to casualty services, the bill proposed to entrust the Minister of Health with the organisation of hospital services, and the responsibility for first aid posts was to be transferred to the Minister of Health under this subsection There had been a demand for the metropolitan boroughs that the responsibility for first-aid parties should be added also, but the Ministry of Health and his own department agreed that the first-aid parties should remain under his control First-aid parties were street parties, and must be organised so that they could collaborate effectively with other street parties, police and fire brigades The objection that divided responsibilities might constitute a grave obstacle to efficiency in emergency had always been kept in mind It was essential to provide for an executive organisation that would function efficiently and promptly, with one effective chain of command from the Government to the smallest unit That was the purpose of the regional organisation. The local authorities were being urged to provide their part of that chain by the appointment of controllers and sub-controllers to work in association with small committees of the local authorities.

Mr. Greenwood said he did not like this legislative device which would place the Minister in a position to order about other ministers. There should be an A.R P. council of equal authority to the Air Council and the Army Council. The Lord Privy Seal should not be running this show with one or two charge hands and an office-boy or two. He should have with him a council of all the ministers concerned. Local authorities' organisations should also be represented on the council, which would then be an authoritative body fitted to work out all the details of a scheme which could be rapidly and effectively put into operation —After further debate the amendment was negatived.

QUESTION TIME

WEDNESDAY, APRIL 19

Women Aliens as Hospital Nurses

Mr. Brooke asked the Minister of Labour how many permits were issued to women aliens in 1936, 1937, and 1938 respectively, to work or to train as hospital nurses in this country —Mr Ernest Brown replied: The numbers of permits issued during 1936, 1937, and 1938 in respect of the employment and training of female aliens as nurses in hospitals were 87, 171, and 224 respectively. In addition favourable recommendations were made to the Home Office during 1936, 1937, and 1938 in respect of female aliens already in the United Kingdom who wished to enter hospital posts, the numbers being 44, 61, and 98 respectively

THURSDAY, APRIL 20

Supplies of Milk to Necessitous Children in Lancashire

Mr. Pilkington asked the Parliamentary Secretary to the Board of Education which Lancashire local authorities were supplying to school-children one pint of milk a day; and also which authorities delivered the milk to the homes concerned during the holidays —Mr Kenneth Lindsay replied: I understand that in the Lancashire county area and in Wigan the amount of free milk supplied to necessitous undernourished children who do not also receive free dinners is usually one pint a day. In the other Lancashire areas where free milk is given the usual amount is either one-third or two-thirds of a pint, though some children receive a pint a day. Where arrangements are made for the supply to be continued during the holidays the children attend centres where the milk is distributed; so far as I am aware the milk is not in any case delivered by the local education authority to the homes of the children, but if a child is prevented by illness from attending the centre the parents can arrange for the milk to be taken to the child's home

Mr. Pilkington: Would it not be better to raise the amount of milk given in all cases to a pint, as a certain amount of distress is felt in those areas where the two systems are working side by side ?—Mr Lindsay We urge that at least two-thirds of a pint should be given, but it is up to the local education authorities.

Fracture Clinics

Sir Arnold Wilson asked the Minister of Health what steps had been taken hitherto to give effect to the recommendations of the interim report on the rehabilitation of injured persons of February, 1937 —Mr Bernays replied: The attention of local authorities was called to this report in Circular 1632 of June 3, 1937, and subsequent local developments of fracture clinics have had regard to the interim recommendations

Sir A. Wilson: Has any action been taken ?—Mr Bernays: I understand that about 12 hospitals, mainly voluntary hospitals, have already provided fracture clinics pending the publication of the report.

Corporal Punishment in Prisons

Sir Samuel Hoare, Home Secretary, informed Mr. Benson that there were 5 cases of corporal punishment inflicted in H M. prisons for offences against prison discipline in 1938—with the birch in 3 cases, and with the cat-o'-nine-tails in 2 cases During 1938 the number of sentences of corporal punishment passed by the courts on persons over the age of 18 was 15, of which 14 were carried out, the remaining sentence having been remitted. The birch was used in 8 cases, and the cat-o'-nine-tails i 6 cases The offences were robbery with violence in 1 cases and armed robbery in 3 cases

Medical Expenses and Income-tax

Mr. Robert Gibson asked the Chancellor of the Exchequer whether, before finally deciding on his Budge proposals, he would consider favourably making permissible for income-tax assessment, deductions in respect o medical expenses, nursing-home costs, and surgeon's fees which had been necessarily incurred to enable a wage-earner to continue earning an income from which income tax was leviable, and if he had any statement to make on the subject —Sir J Simon: I regret I cannot see my way to adopt the hon. member's suggestion.

TUESDAY, APRIL 25

Vaccination as a Condition of Employment

Squadron-Leader Hulbert asked the Minister of Health if he was aware that vaccination had had fatal results in cases in which adolescents had been vaccinated for the first time to qualify for employment with an undertaking which, in the interests of public health, required its employees to have been vaccinated, and whether, having regard to the terms of the last paragraph of the circular issued by the Ministry on Aug 19, 1929, he would introduce fresh legislation upon the matter.—Mr Bernays replied The answer to the first part of the question is in the affirmative My department have drawn attention to the undesirability of primary vaccination during school age or adolescence both in annual reports and in the circular referred to. My right hon friend is considering giving further guidance in the matter, but it is difficult to see how legislation would help

Shale-dust and Silicosis

Mr. James Griffiths asked the Secretary for Mines if he was aware of the increase in the use of shale-dust for coal-dusting purposes, and whether, in view of the fact that shale-dust contained substantial percentages of free silica, and might be a cause of silicosis, he would take steps to prohibit its use for this purpose —Mr Geoffrey Lloyd replied. I believe there has been some increase in the use of shale-dust due to the necessity to use for stone-dusting a dust which shall remain freely dispersible under the conditions of use I am advised that shale-dust has been very extensively used for stone-dusting for 20 years and experience does not in any way suggest that its use is a cause of silicosis or that there is any need to prohibit its use.

Royal Northern Group of Hospitals, London At the annual council of governors of this group o hospitals on April 20 Lord Bessborough, the chairman stated that the report covered the eighty-third year of th hospital's existence and, in that period, it had grown from a single room maintained at a cost of 12*s* 6*d* a week for a part-time nurse to the seventh largest hospita organisation in London During the past year 145,91 days of inpatient treatment had been given—an increase of 6400 days—and the outpatient attendances increased by nearly 19,000 to 394,705 The departments for the treatment of cancer and fractures had been brought up to date, but building operations had been temporarily suspended because of present circumstances. The provision of a home for the whole nursing staff would be undertaken as soon as possible at a cost of £75,000 The general maintenance fund of the hospital had a deficit last year of £30,753 and the position had become so acute that the King Edward's Hospital Fund for London had promised an emergency grant of £5000 if additional donations equalling that amount could be secured from other sources.

OTTAWA CIVIC HOSPITAL

OBITUARY

ALFRED CARLETON WILLIAMS

M R C S , D P H

As an authority on mental deficiency, in its clinical as well as its administrative aspects, Dr Carleton Williams was greatly valued by his colleagues at County Hall, and his death at 62 will also be widely regretted by teachers and others working in the special schools of the London County Council He became a whole time officer of the council in 1911 and from 1912 onwards was closely associated with the late Dr F C Shrubsall in the ascertainment and care of mental defectives Few acts passed during this century have presented more difficulties to local authorities than the Mental Deficiency Act of 1913 and the Education Act relating to mentally defective children passed in the following year They placed on the medical profession the onerous task of deciding which persons are mentally defective, and in the metropolitan area Dr Williams and Dr Shrubsall were the two men on whose judgment of what constitutes mental defect the administration of these acts was based Naturally the provinces looked to London for a lead, and they were not disappointed The standards and criteria of mental deficiency which Shrubsall and Williams adopted after much careful experiment gained the general approval of medical officers, magistrates and others concerned with the administration of this branch of the mental health services, and this was no small achievement in a field in which bias, suspicion, and propaganda warp the judgment of many well meaning persons in the general community Dr Williams's fellow workers admired his diagnostic ability when confronted with abnormal physical conditions and the versatility of his professional knowledge Both the ability and the knowledge proved an asset in the particular tasks he had to perform and with Shrubsall he was able to lay a sound foundation upon which others may build with confidence He was however a man of retiring disposition, and only those intimately associated in his work knew how much reliance was placed on his cool judgment He was always ready to share his knowledge and experience As part of his duties he had for many years visited all the London prisons in connexion with the certification and disposal of patients from the L C C area who might be dealt with under the Mental Deficiency Acts "His courtly and courteous manner," writes a member of the prison service, "endeared him to all and his practical outlook and friendly coöperation enhanced the value of his opinions" Others who knew him speak of his honesty of mind, his modesty and his approachability Although his physical powers were waning and for some time had caused much concern, his mental powers were unimpaired to the end To suggestions that he should spare himself he offered a brave and smiling resistance, and he worked to the last

Dr Williams was educated at King's College, London where he was junior medical scholar, Warneford scholar and Sambrooke exhibitioner, qualifying in 1901 He married in 1925 Miss Florence Blakiston, one of the nursing sisters of the L C C 's public health department Members of the medical profession conversant with Welsh national life will be interested to learn that Dr Williams was a grandson of the Rev John Jones, Talysarn one of the greatest preachers of nineteenth century Wales He bore a strong physical resemblance to his grandfather, but the resemblance was even closer in their intellectual endowments and the disinterested service they both gave to their generation.

FRANCIS ALEXANDER BARTON

B A CAMB , M R C S

Dr Barton, who died at Romsley Hill Top, Worcestershire, on April 18, was a man of astonishingly varied interests He was born at Dover in 1861, the son of Dr F E Barton, and was educated at Harrow and Caius College, Cambridge, where only lack of weight lost him a rowing blue He did his clinical work at St George's Hospital, and after qualifying in 1886 went into practice at Beckenham There he spent most of his leisure in studying aeronautics and in 1902 made an ascent in a balloon from Beckenham, coming down in the Channel In 1905 he designed an airship with controllable wings that made a short flight at Alexandra Palace, and soon afterwards he built the first hydroplane He then experimented on the production of non alcoholic wines in the South of France, but at the outbreak of the late war was again working with hydroplanes During the war he returned to practice in Norwich, and in 1918 became deputy commissioner of medical services to the Ministry of Pensions for Berkshire and Cambridgeshire He retired in 1925 and until three years ago lived at Alassio Barton was a keen musician, and had composed several songs and waltzes Last year he published his reminiscences, under the title "Jack of All Trades"

ROBERT PERCIVAL LANGFORD-JONES

M B LOND.

THE death of Dr Langford-Jones at Whetstone on March 19 is felt by a wide circle, for he combined in unusual degree the qualities of family doctor and of medical statesman The only son of a general practitioner at Bangor, he was trained at University College Hospital where he qualified in 1916 after holding a house appointment and then served as naval surgeon After taking his London degree in 1920 he joined a firm of practitioners at Finchley and was attached to the memorial hospital there, acting as chairman of its appeal committee He was a valued member of the British Medical Association, representing his division at the Nottingham meeting of 1926 and the London meeting of 1930, after which he was elected chairman of the division In 1928 he became a vice president of the Medical Defence Union and later he was assistant secretary to Dr Neal, on whose death he took over for a time the onus of the secretariat, but to the council's regret he was unwilling to give up permanently the personal contacts of medical practice During eighteen years of practice he had become a familiar figure in the district

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SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN — At a quarterly court of directors held on April 12, Mr H S Barwell, senior vice president, being in the chair, one new member was elected and a donation of £50 reported from the Royal Medical Agency The return of income tax to the value of £1005 for the year ended April 1939 was expected The date of the annual general meeting was fixed for Wednesday May 24 Membership of the society is open to any registered medical man who at the time of his election is resident within a 20 mile radius of Charing Cross Particulars from the secretary at 11, Chandos Street London W 1

MEDICAL NEWS

University of Glasgow

On April 22 the following degrees were conferred :—

M D—Jane O French and J H Hutchison (with honours); E C R Couper, Thomas Fletcher and Hugh Smith (with commendation), O A Ajose (in absentia), R W Carslaw, S R Jamieson, and G B Mair

M B, Ch.B—J M Bailey, E M Barbour, P. H Barkey, J S Binning, J F. Bishop, James Black, R W Bone, William Briggs, C E Brown, F B Brown, D M Campbell, R J P R Campbell, Elizabeth K R Davidson, I E Dawson, William Dougall, Gavin Fleming, Elizabeth H B Gardiner, George Gerrard, J R Gibson, Alberta S Gilmour, W M C Gilmour, David Glendinning, Matilda K Godfrey, Mary R Gray, A M Green, J L Hamilton, William Hamilton, Thomas Kane, D C Langwell, Sheila Latta, Hugh Lauder, L F McConnell, J B McEwen, John Macfadyen, William Macfarlane, Alexander Mack, Edith McKnight, Mary P Maclean, D G MacNeill, A L McPheat, C R Marks, J. B Miller, D C Moir, Marion H. Nicolson, Robert O'Kane, Stella M B Perry, B O Porchetta, J F Shapiro, William Sillar, R H Simpson, A G Sked, D A P. Stephen, H S Sweet, William Tannock, A P D Thomson, J S Walters, Andrew Wilson, and Randolph Wylie

Bellahouston gold medals for eminent merit in M.D. theses were awarded to Dr. J. C Dick, Dr. Tudor Jones, and Dr. W. T. W. Paxton.

University of Aberdeen

Applications are invited for A W. Garden fellowships which are tenable for 3–5 years in any of the departments of the faculty of medicine in the university Graduates of any British university are eligible, but preference will be given to medical graduates of the University of Aberdeen. Further particulars will be found in our advertisement columns

University of Manchester

Applications are invited in our advertisement columns for a travelling scholarship in medicine and a scholarship in pathology from graduates of any university who have taken their full course of instruction in medicine and surgery at the University of Manchester and at the Manchester Royal Infirmary

Gresham College

Four lectures on physic will be delivered at the college, Basinghall Street, London, E C 2, by Dr V S Hodson on May 2, 3, 4, and 5, at 6 P.M. He will speak on the human nervous system *Admission is free to all*

Ophthalmologists at Home

Several things conspired to make the congress of the Ophthalmological Society (reported on another page) a social as well as a scientific event In the first place Mr. Harrison Butler, the president, had carried his suggestion that the wives of members should be welcome at the annual dinner, and in the second place three kindred international meetings were being held in London at the same time and the U K society hospitably made the dinner the opportunity of meeting a number of delegates and their ladies The result was a lively gathering which completely filled even the spacious dining-room of the Langham Hotel. In proposing The Society Mr. Butler praised famous men, beginning with those—Hulke, Nettleship, Henry Power—who had founded the society in 1880 on the base of the earlier Moorfields Club. The Bowman lecture, the idea of Gowers, had been given by such men as Critchett, Hughlings Jackson, Hutchinson, Argyll Robertson, and Waren Tay. Later on the society became affiliated with provincial societies of like character, maintaining its independent character Mr. Hugh Lett, in responding to The Guests, recalled the names of three surgeons who had presided over both the society and the royal college—Hutchinson, Howse and Tweedy.

Among the guests participating in the congress by invitation were Prof. H Lauber (Warsaw), Dr Harald Gjessing (Oslo), Prof F Terrien (Paris), Dr. René Onfray (Paris) and Dr. A J. Bedell (Albany, N Y.); delegates from the International Organisation against Trachoma, Dr Wibaut, Dr Park Lewis, Prof E de Grósz, and Dr. Harry Gradle, delegates from the International Association for the Prevention of Blindness, Prof von Szily, Dr. Bailliart, and Dr. Churchill, delegates from the International Ophthalmological Council, Prof. J. W. Nordenson (president), Dr Ehlers (secretary), Dr E. Pflüger (treasurer), Prof Walther Löhlein, and Dr. A Knapp Prof. Karl Lindner (Vienna) was also present

Hospital for Sick Children, Great Ormond Street

For some time the skin clinic of this hospital has no longer been held on Wednesday mornings As some patients continue to arrive at this time we have been asked to announce that the clinic is now held on Tuesdays at 1 30 P M

Postgraduate Course at Zürich

A special postgraduate course in medicine and surgery which will be given in English has been arranged by the medical faculty of the University of Zürich It will be held from Aug 20 to 26, and further information may be had from Prof. W. Loeffler, medical clinic, Kantonsspital, Zürich.

Tuberculosis Demonstration

On Saturday, June 3, at 3 P M. at Papworth Hall, Cambridge, Dr Walter Pagel will give a demonstration on the bactericidal power of the blood-serum and its significance in pulmonary tuberculosis Those who wish to attend should communicate with Dr. Pagel at Papworth Hall.

British Dental Association

To mark the occasion of the annual meeting of this association in Newcastle-on-Tyne from July 31 to Aug 4 the University of Durham will confer the honorary degree of M D S on Mrs Lilian Lindsay, hon librarian of the association, and Mr A T Pitts, scientific editor of its journal.

Ophthalmological Society of the United Kingdom

The first award of the Treacher Collins prize of the value of £100 has been made by this society to Dr. T Hewitson Brown (Edinburgh) for an essay on cerebrospinal disease and its relation to the optic nerve. Essays by Dr S Nevin (King's College Hospital) and Dr N S Alcock (British Postgraduate Medical School) were highly commended

British Postgraduate Medical School

On Monday, May 1, Dr. H E Robertson, senior pathologist at the Mayo clinic, will lecture at the school on residual lesions in the stomach On Monday, May 15, Dr R C. Wingfield will give the first of six weekly lectures on pulmonary tuberculosis. On May 17, 24, and 31 Prof A. A. Miles will lecture on the isolation of bacterial antigens All these lectures will be held at 4 30 P.M. Applications for tickets should be made to the dean of the school, Ducane Road, London, W 12.

Tuberculosis in Industry

In the course of an address to the Advisory Medical Committee of the Industrial Welfare Society on April 18 last, Dr. Philip Ellman, after discussing pathogenic and non-pathogenic dusts, spoke of a technically satisfactory radiogram in the early diagnosis of pulmonary tuberculosis Among industrial workers in factories a chest radiogram would often reveal the definite presence of tuberculous lung infiltration in the absence of symptoms and clinical signs When tuberculosis was treated adequately at this particular stage the results obtained were striking, for the presence of physical signs frequently indicated considerable structural lung disease Dr. Ellman did not wish to decry the value of the stethoscope but pleaded for equal facilities and consideration to be given to examination of industrial workers by the X-ray tube. As a preventive measure all large factories should have on their staff a medical officer with adequate facilities, including X-ray apparatus. This would, in the long run, prove to be a financial gain for all concerned for it would assist the discovery of early pulmonary lesions and the study of their pathogenesis Interpretation of chest radiograms required at least as much experience as that needed for the stethoscope. Prof E L Collis, who presided, said that every dust and every mixture of dusts must be studied separately Meanwhile the key to tuberculosis in industry was that the disease is infectious; hence some industries, like families, might become infected In time gone by tailoring, printing, and shoe-making became infected It took years of improved hygiene to eradicate such infections, but they were being reduced, and what held good for occupations held good for the community.

Postgraduate Courses in Tuberculosis

Postgraduate courses will be held under the auspices of the Joint Tuberculosis Council at the Royal Chest Hospital, London, from May 15 to 17, and at the London Chest Hospital from May 18 to 20 A course in non-pulmonary tuberculosis will also be held from May 22 to 26 at Heatherwood Hospital, Ascot, and at St Mary Abbot's Hospital, Kensington Further information may be had from Dr J B McDougall, hon secretary of the council, Preston Hall, Nr Maidstone, Kent

German Radiological Society

The thirtieth congress of this society will be held at Stuttgart from May 24 to 27 under the presidency of Herr Hermann Behnken, Dr Phil, and Dr A Reisner Subjects for discussion will include organisation of a university or hospital radiological service, mass radiography, radiological investigation of the heart, the effect of X rays on the cells, sterilisation through X rays Further information may be had from Dr Reisner, Herdweg 74A, Stuttgart N

King's College Hospital

The first meeting of the committee elected to carry out the wish of King's College that a hospital should be attached to the medical school was held on May 13, 1839 A thanksgiving service to commemorate the centenary of this event is to be held in St Paul's Cathedral on Friday May 12, at 5 30 P M *The Duchess of Gloucester* will attend as president of the hospital, and the address will be given by the Archbishop of Canterbury Further information may be had from the house governor of the hospital, Denmark Hill, London, S E 5

Empire Rheumatism Council

The Duke of Gloucester presided over a meeting of this council held at the Mansion House, London, on April 26 He said that at a conservative estimate there were today over 1,000,000 adults and over 200,000 children in the United Kingdom suffering from rheumatism Lord Horder, chairman of the council, emphasised the grave deficiency of means for applying treatment that existed in this country Sir William Willcox, F R C P, vice chairman, said that the whole Empire was being asked to subscribe £500,000 It was estimated that this sum would be sufficient for the seven years term of the campaign London and the home counties had already secured £51,000 of the £150,000 they were being asked to find Sir Joseph Burn and Mr A G Timbrell Fisher, F R C S, proposed a vote of thanks to the Duke of Gloucester

Appointments

BEALL, DESMOND, Ph D Toronto, junior assistant in the department of pathology of the British Postgraduate Medical School, London

BOHN G L, M B Lond, F R C S hon assistant surgeon to the Royal Berkshire Hospital, Reading

BOYD, A M, M.B Belf., resident assistant medical officer at Epsom County Hospital

BROOKES THEODORA M R C S resident assistant medical officer at the Monyhull Colony Birmingham

BUCKLE, BARBARA D, M B Birm., resident assistant medical officer at the Monyhull Colony, Birmingham

DOWLING HEATHER M B Sydney D M R E, radiotherapeutist at the Royal Infirmary, Leicester

FLOOD J C, M Ch N U I visiting surgeon to the Charitable Infirmary Jervis Street Hospital, Dublin

GILMOUR WILLIAM, M D Glasg D P H, medical officer of health for Hamilton

HALPE DAVID, M B Lond, D C P, hon pathologist to the East End Maternity Hospital London

McGAVIN, DONALD, M Chir Camb *F R C S, hon assistant* surgeon to the Royal Infirmary, Leicester

MAGILL H G M B Belf, assistant medical officer at Cheshire County Mental Hospital, Parkside

MILNE, CAROLINE, M R C S resident house physician at the Invalid and Crippled Children's Hospital London

WALKER, F H AITKIN, M B Camb, F R C S hon surgeon to the Royal Berkshire Hospital Reading

London County Council—The following appointments are announced A M O *(I) or (II)* = assistant medical officer (class I) or (class II) —

WHEELER, I E F R C S, A M O (I), Dulwich
CAMPBELL, W S M B Belf F R C S L M, A M O (I) St Mary Abbots
KANAAR, A C M B Lond, M R C P F R C S E A M O (I), St Peter's
SMITH, S M M B N Z A M O (I) St Andrew's
BLOOM ROSE M B Lond, A M O (II) St Andrew's
ROBERTSON, ANNE C, M B Belf D P H, A M O (II), St Giles',
ANDERSON, B H M B Melb, A M O (II) St Giles
RAE, F S, M B Aberd A M O (II) St Mary, Islington
BOYD, FRANCIS M B Belf, A M O (II) St Mary, Islington
SOLLEY RUPERT, M B Camb A M O (II) St Stephen's
RUDD, T N M D Lond M R C P, A M O (I) Western, and
CLARKE NORAH H C M.B Lond, A M O (II) St Mary, Islington

Examining Surgeons under the Factories Act, 1937 Dr C S HEMMINGS (Bishops Waltham District, Southampton) Dr E V LAMBERT (Uxbridge District, Middlesex)

Vacancies

For further information refer to the advertisement columns

Aberdeen University—A W Garden Fellowships, each £200
Altrincham General Hosp.—Sen and jun H S s at rate of £150 and £120 respectively
Ashton under-Lyne District Infirmary—H S, at rate of £150
Battersea General Hosp, Battersea Park, S W 11—Cas O, at rate of £60
Belfast Queen's University—Two Musgrave studentships, each £200
Birmingham St Chad's Hosp.—H S at rate of £150
Birmingham Selly Oak Hosp—Jun M O 's, each at rate of £200
Birmingham General Hosp—Res surg O, £150
Birmingham and Midland Eye Hosp—Res surg O, £200
Bodmin Cornwall County Mental Hosp—Med Supt. £1000
Bolton Borough Isolation Hosp—Res asst M O £450
Burnley County Borough—Asst M O H £600
Bury County Borough—Asst M O H, £600
Camberwell House Mental Hosp, S E 5—Second asst M O £350
Cardiff, King Edward VII Welsh National Memorial Association. Asst res M O for North Wales Sanatorium £200
Cardiff Royal Infirmary—Radium registrar £400
Central London Throat, Nose and Ear Hosp, Gray's Inn Road W C 1—Two asst surgeons
Ceylon Medical College.—Professor of physiology and registrar, £1150
Chichester Graylingwell Hosp—Deputy med supt, £700
Croydon General Hosp—Hon asst to surgeon in charge of the urological and proctological dept Also two hon asst surgeons
Dudley Guest Hosp—H S, £150
Epsom and Ewell Borough—Temp asst M O, £500
Finchley Borough—Temp asst M O for air raid precautions, £500
Glasgow Royal Infirmary—Radiologist for X ray departments
Gloucester, Barnwood House Hosp for Mental and Nervous Disorders—Second asst M O, £450
Golden Square Throat Nose and Ear Hosp, W 1—H S £100
Hosp for Sick Children, Great Ormond Street, W C 1—Res med asst and clin pathologist, £125
Hosp for Women, Soho Square W 1—Res M O, at rate of £100
Iraq Basrah Port Directorate—Asst port health officer, 70 dinars a month
King Edward Memorial Hosp, Ealing, W 13—Cas O and H.S, at rate of £150
King's College Hosp, Denmark Hill, S.E 5—Asst physician to diabetic dept
Lancashire County Council—Asst. county M O £800 Also jun H S at Biddulph Grange Orthopædic Hosp at rate of £200
Lancaster, Royal Albert Institution for the Feeble-minded—Res jun asst M O, £375
Leamington Spa, Warneford General Hosp—Sen res surg O, £200
Leicester Royal Infirmary—Res. radiologist at rate of £200
Lincolnshire Joint Board for the Mentally Defective.—Asst. M O, £350
Liverpool Eye, Ear, and Throat Infirmary—Hon asst aural surgeon and laryngologist
Liverpool University—Chair of Surgery
Liverpool University and Maternity Hosp—Res obstet asst and tutor £250
London County Council—Asst M O (class I) £350 Also asst M O 's (class II), each £250
London Jewish Hosp, Stepney Green E 1—Res M O and H P, at rate of £150 Also H S and cas O each at rate of £100
Manchester, County Mental Hosp, Prestwich—Locum tenens M O, 7 guineas per week
Manchester Monsall Hosp for Infectious Diseases—Jun res asst M O at rate of £250
Manchester, Withington Hosp—Deputy med supt, £600
Manchester City Education Committee—School M O £1000
Manchester Royal Infirmary &c—Dickinson scholarships £300 and £75
Middlesex County Council—Asst M O for public health and school medical dept, £600 Also asst M O for Redhill County Hosp £400
Mildmay Mission Hosp Austin Street Bethnal Green E 2—Med supt., £150
National Temperance Hosp Hampstead Road N W—H S, at rate of £100
Newcastle-upon-Tyne, King's College—Asst bacteriologist in public health laboratory, £400
Newton le Willows and Golborne Urban Districts—M O, £600
Nottingham, Mapperley Hosp—Locum tenens M O, 7 guineas per week
Nottingham General Hosp—Res cas O at rate of £150
Oxford Warneford Hosp for Mental Disorders—Locum tenens 7 guineas per week.
Paisley Renfrew District Asylum Dykebar—Med supt, £[illegible]
Portsmouth and Southern Counties Eye and Ear Hosp—H.S £150
Prince of Wales's General Hosp., N 15—Hon officer to speech therapy and lip reading dept Also hon dental surgeon

Putney Hosp , Lower Common, S W 15 —Res M O , £150

Queen Charlotte's Maternity Hosp , Marylebone Road, N W 1 —Res anæsthetist, at rate of £100 Res anæsthetist and district res M O , at rate of £90 and asst res M O , at rate of £80

Redhill, Surrey, Royal Earlswood Institution —Jun asst M O , £350

Richmond, Surrey, Grove Road Institution —Res asst M O , at rate of £250

Rotherham County Borough —Sen school M O and deputy M O H , £750

Rotherham Voluntary General Hosp —Secretary superintendent

Royal Air Force —Commissions

Royal Cancer Hosp , Fulham Road, S W 3 —Surg reg , £150 Also H S , at rate of £100

Royal London Ophthalmic Hosp , City Road, E C 1 —Pathologist and curator, £650 Also two outpatient officers, each £150

Royal Naval Medical Service.—M O 's

Royal Northern Hosp , Holloway, N 7 —Consulting physicist.

Ryde, Royal Isle of Wight County Hosp —H P , £130

St Paul's Hosp for Urological and Skin Diseases, Endell Street, W C 2 —H S , at rate of £100

Salop County Council —Deputy county M O H &c , £700 Also asst M O H , &c , £600

Sheffield Children's Hosp —H S , at rate of £100.

Stoke on-Trent City Education Committee —Asst school M O , £500.

West London Hosp , Hammersmith, W 6 —Children's outpatient M O , at rate of £150

West Sussex County Council —Res med supt and asst county M O H , £700

Westminster Hosp , Broad Sanctuary, S W 1—Chief asst and registrar to electrical and irradiation unit, £250 Also Part-time chief asst and registrar to radiological department, £150

Medical Diary

May 1 to May 6

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1

TUESDAY

Orthopædics 4 30 P M , Mr C Lambrinudi (1–2) Arthrodesis of the Hip for Old Dislocation Mr H J Seddon : (3) Extensive Ulceration of Skin Over Shoulder ? Tuberculous ? Streptococcal (4) Plexiform Neuroma of the Upper Limb Mr J A Cholmeley . (5) Osteo-chondrodystrophy Mr K I Nissen (6) Osteogenic Sarcoma of the Humerus treated by Irradiation Mr F P Fitzgerald : (7–9) Fracture of the Head of the Radius treated by Manipulation 5 30 P M , annual general meeting

WEDNESDAY

History of Medicine 5 P M , annual general meeting Dr H P Bayon · Ancient Egyptian, Hippocratic, and Medieval Pregnancy Tests

FRIDAY

Otology 9 30 A M , cases, 10 30 A M , annual general meeting Mr Terence Cawthorne and Dr C M Hinds Howell The Otologist's Part in the Investigation of Brain Lesions Dr T O Howie will also speak

Laryngology 4 P M , cases 5 P M , annual general meeting Mr Walter Howarth and Mr E D. D Davis Complications of Intranasal Surgery

Anæsthetics 8 30 P M , annual general meeting

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

FRIDAY —8 30 P M (De Vere Hotel, Kensington, W 8), Prof Henry Cohen : Some Recent Advances in Medicine,

BIOCHEMICAL SOCIETY

SATURDAY —2 45 P M (department of biochemistry, University of Oxford), A C Bottomley, S J Folley, and F H A Walker Induction of Prolonged Hyperglycæmia in the Lactating Ruminant by Subcutaneous Implantation of Adrenalin Tablets D E Green, J G Dewan, and H S Corran Relation of the Xanthine-aldehyde Oxidase to a Milk and Liver Flavoprotein C Long and R A Peters · Metabolism of α-ketobutyric Acid by Pigeon Brain I Banga, S Ochoa, and R A Peters Pyruvate Oxidation in Brain R A Peters and R J Rossiter Thyroid and Vitamin B_1 H M Sinclair . Estimation of Vitamin B_1 in Cerebrospinal Fluid L J Harris Vitamin-B_1 Complex, Part IX Nicotinic Acid as a Dietary Essential for Pigeons and Guineapigs L J Harris · Vitamin-B_1 Deficiency and Bradycardia in Pigeons and Kittens Y L Yang and L J Harris Estimation of Vitamin B_1 in Urine by the Thiochrome Test

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON

TUESDAY —5 P M (University College, Gower Street, W C 1), Prof E J Bigwood (Brussels) Chemical Reactions between Proteins and Electrolytes

TAVISTOCK CLINIC, Malet Place, W C 1

MONDAY —6 P M , Dr Emanuel Miller · Relations of Neurology to Psychology

WEDNESDAY —3 P M , Dr Cedric Shaw The Allergic Diseases 4 30 P M , Dr H Crichton-Miller Insomnia

THURSDAY —6 P M , Dr Curt Bonheim Psychological Characteristics of the Early School-child

INSTITUTE OF PSYCHO-ANALYSIS, 96, Gloucester Place, W 1

TUESDAY —8 30 P M , Dr John Rickman · The Individual and the Group

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducan Road, W 12

TUESDAY —1 30 P M , Dr C M Hinds Howell : Syphilis of the Nervous System

WEDNESDAY —NOON, clinical and pathological conference (medical) 2 P M , Dr T H Belt · The Special Pathology of the Lung 3 P M , clinical and pathological conference (surgical) 4 30 P M , Prof J McIntosh Cancer

THURSDAY —2 15 P M , Dr Duncan White radiological demonstration 3 30 P M , Mr Wilfred Shaw . Neoplasm of the Ovary, including Endometriosis

FRIDAY —2 P M , clinical and pathological conference (obstetrics and gynæcology) 2 30 P M , Mr Cecil Joll Toxic Goitre

Daily, 10 A M. to 4 P M , medical clinics, surgical clinics an operations, obstetrical and gynæcological clinics an operations

ST MARY'S HOSPITAL, W 2

TUESDAY —5 P M (institute of pathology and research) Dr Wilson Smith . The Prevention and Control of Virus Diseases

ST GEORGE'S HOSPITAL, S W 1

THURSDAY.—5 P M , Dr Anthony Feiling . neurological demonstration

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W C 1

THURSDAY —2 P M , Dr R S Frew : Birth Readjustment and its Errors 3 P M , Dr W W Payne : Acidosis and Ketosis in Children

Outpatient clinics daily at 10 A M and ward visits at 2 P M

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W C 2

MONDAY —5 P M , Dr H MacCormac · Lichen Planus

TUESDAY —5 P M , Dr H Corsi . Diseases of the Nails

THURSDAY —5 P M , Dr J M H MacLeod Ringworm Infections

FRIDAY —5 P M , Dr Hugh Gordon Acute Dermatitis of the Face

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W 1

MONDAY to SATURDAY —ST JOHN'S HOSPITAL, 5, Li Street, W C 2, afternoon course in dermatology (Open to non-members)—MAUDSLEY HOSPITAL, Denmark Hill, S E 5, afternoon course in psychological medicine—BROMPTON HOSPITAL, S W 3, Tues and Fri , 5 15 P M , M R C P course in chest diseases —MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W 1, Mon , Wed , and Fri , 5 15 P M , primary F R C S physiology course

MANCHESTER ROYAL INFIRMARY

FRIDAY —4 15 P M , Dr Fergus Ferguson neurological cases

Births, Marriages and Deaths

BIRTHS

ALCOCK —On April 19, at Fawley Green, Henley-on-Thames, the wife of Dr N S Alcock—a son

CALVERT —On April 22, the wife of Dr E G B Calvert, of Harley Street, W 1—a daughter

FINNIGAN —On April 13, at Hong Kong, the wife of Surgeon Commander (D) C J Finnigan, R N —a son

KERR —On April 25, at Cleveland Gardens, W 2, the wife *of Dr Eric J Kerr, of Worthing—a son*

PAKENHAM-WALSH —On April 23, the wife of Dr R Pakenham-Walsh, of Lancaster—a son

SCOTT —On April 21, at Speen, Newbury, the wife of Dr T G Scott—a son

MARRIAGES

GUNNERY—PEARSON —On April 15, at St Jude's, Kensington, Oswald Gunnery, M R C S , to Hazel Hilda Pearson

OLIVER—MCNEIL —On April 22, at Christ Church, Mayfair, Wilfrid Allen Oliver, M D Lond , M R C P , *to* Mur McNeil

DEATHS

BARTON —On April 18, at Romsley Hill Top, Worcestershire, Francis Alexander Barton, B A *Camb* , M R C S , aged

CORNER —On April 23, Frank Corner, M R C S , J P , of Blomfield Road, W 9, aged 77

CROLY —On April 25, at Pyrford Heath Surrey, Lieut Col R G G CROLY, M B R U I , F R C S E , I M S (retd)

HUNT —On April 19, Langford Villiers Hunt, M D Dubl , of Drogheda, aged 59

MACDONALD —On April 24, Norman James Macdonald, M R C S, Doctor of Osteopathy Kirksville, of Wimpole Street, W 1 aged 44

REES —On April 24, at Bognor Regis Major Griffith Ben Rees, M B Lond , R A M C (retd), aged 58

ROSS —On April 17, at *Mevagissey, Cornwall,* Andrew Tay Ross, M D Glasg , F R C S E , late of Leigh, Lancs, aged

SEATON —On April 24, in Leeds, Douglas Seaton, M B Manc , aged 69

STEPHEN —On April 18 in London, Surgeon Commander Har Forrest Stephen, M B Aberd , R N (retd), aged 47

SUTHERLAND —On April 18, at Belhaven, Dunbar, Lt-Col David Sutherland, C I E , M D Edin , F R C P I M S (retd)

WILLIAMS —On April 19 Alfred Carleton Williams, M R C S D P H of Croydon, aged 62

WILSON —On April 21, at Bridge, near Canterbury, Arthur Thomas Wilson, M B Dubl , aged 67

N.B —A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

DEFICIENCY DISEASES IN KASHMIR

By D. C. Wilson, M.R.C.P., M.C.O.G., D.P.H.
LATE MEDICAL OFFICER, WOMEN'S MEDICAL SERVICE, INDIA

A comparative dietary survey has recently been carried out and clinical examinations of children have been made among various Indian communities. The results of the dietary survey and the statistical analysis of the clinical material will be published in full elsewhere. Kashmir State, however, by reason of its geographical position and physical features, provides special localised conditions which affect the health of its communities. The deficiency diseases occurring there form the subject of the present communication.

Situated to the north of British India, the state of Kashmir consists of a central fertile plain watered by a system of rivers, lakes, and canals, surrounded by valleys in which mountain streams provide water for agriculture. This irrigated area is bounded by foothills which constitute the dry or unirrigated tracts of Kashmir, and the country is cut off by high mountain ranges from British India and central Asian states. There are no railways, but roads and tracks lead in to the country over passes, some of which rise to heights of over 9000 feet. The country experiences a severe winter, and the inhabitants often exhibit great hardiness.

DIET

The dietary habits of the people in Kashmir may be briefly summarised as follows:—

Irrigated areas.—The diet of communities inhabiting the Vale of Kashmir consists mainly of rice and vegetables, the latter being used fresh in summer but dried for winter consumption. The people also eat pulses. Vegetable oils are used for cooking. There are certain modifications of diet among the followers of the two chief religious sects. Kashmiri Hindus are usually town dwellers. They drink a considerable amount of tea with sugar but without milk, and with very few exceptions they abstain from eating flesh. Kashmiri Moslems include meat in their dietary but usually can afford only a very small amount. They drink their tea with milk and with it use salt instead of sugar. Villagers are mostly Moslems. They obtain more milk and vegetables than do town dwellers of the same economic status. Kashmiri Moslems of one special class pass most of their lives on the wooden craft plying along the rivers, canals, and lakes. They eat a considerable amount of fresh vegetables besides some fish, and they are noted for their freedom from disease. Since but little shelter is obtainable on their primitive boats, even in winter all members of the family live an active outdoor life.

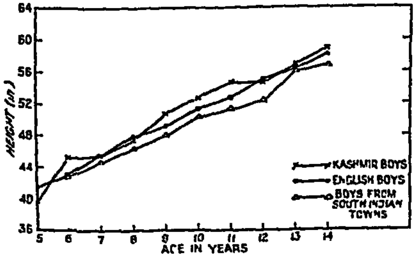

Fig. 1—Height curves of Kashmiri, English, and South Indian boys.

Dry tracts.—Dietary habits are necessarily modified in the unirrigated foothills and in the scattered hamlets situated at high altitudes, for it is only possible to grow small amounts of rice. When this is consumed the families depend for the remaining part of the year on other cereals, possibly wheat or millet, but usually maize. Few vegetables are grown, but wild fruits and berries may be gathered. People in towns often find it more convenient to buy milled rice in the bazaars, but in the country districts home pounded rice is still much used. The use of milled rice is, however, spreading in rural areas. Mill owners are willing to fetch rice from the homesteads, mill it, and return it free of charge, provided they are allowed to keep the bran. The rice is usually not highly polished. Fermented rice-water is sometimes eaten together with the rice when vegetables are scarce.

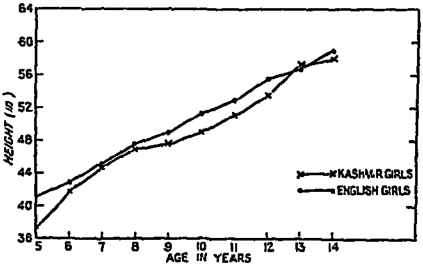

Fig. 2—Height-curves of Kashmiri and English girls.

PHYSIQUE AND HEALTH

School children.—Clinical examinations and physical measurements of 408 school children were made. The method used was essentially the same as that previously described (Wilson, Widdowson, and Wait 1937), and all the children were examined by the same observer. Height and weight were measured, and the results are shown graphically in figs. 1 to 4 together with corresponding measurements for South Indian children (Aykroyd and Rajagopal 1936) and for English elementary school children (Board of Education 1927). Kashmiri girls tend to be shorter and lighter than English girls of the same age, but in the case of the boys there is little or no difference. The Kashmiri boys are heavier than boys from South Indian towns.

Dental examinations of the children included records of the number of teeth present in the mouth at the time of examination and the number noted by naked eye inspection to be carious. The regularity of the front teeth was also observed, and the antero-posterior occlusion was classified as normal or pre-normal and post-normal. A summary of the results is given in the table. They will be fully discussed in the detailed report. The most noticeable feature is the low incidence of caries.

A tenth of the children examined showed evidences of *phrynoderma* or toad-skin, the follicular hyperkeratosis of the skin described and named by Nicholls (1933) The name has since been adopted by other writers (Loewenthal 1935a and 1935b, Aykroyd and Rajagopal 1936).

Three per cent of the children were found to have *angular stomatitis*—i e, stomatitis of the lips and angles of the mouth described by Nicholls (1933), Williams (1933), Landor and Pallister (1935), and Aykroyd and Krishnan (1936) as a sign of malnutrition

Only 2 of the 406 children had *Bitot's spots*, the conjunctival lesions, first mentioned by Bitot (1863), that look like spots of foam or whitewash on the bulbar conjunctiva, most often to the outer side of the cornea. Wright (1931) and Aykroyd and Krishnan (1936) record its incidence among ill-nourished peoples in South India.

EXAMINATION OF THE TEETH OF 406 CHILDREN

Age in years	Number of children	Percentage of teeth carious (mean)	Percentage of children with front teeth		Percentage of children showing occlusion	
			Regular	Irregular	Normal or pre-normal	Post-normal
5	12	9·3	100	0	100	0
6	81	3·7	72	28	99	1
7	65	3·4	62	38	100	0
8	37	2·6	70	30	97	3
9	36	3·8	81	19	100	0
10	37	3·0	73	27	100	0
11	48	2·1	77	23	96	4
12	50	2·8	90	10	96	4
13	36	2·0	94	6	100	0
14	34	1·0	77	23	100	0

Two per cent. of the children had *rickets.* In assessing its incidence the lesser degrees—e g., enlarged epiphyses—were taken into account (Wilson 1931).

Adults.—Other deficiency diseases and diseases often associated with malnutrition found among the adult population include *adolescent (late) rickets* and *adult rickets (osteomalacia)* Both these syndromes (evidence of deficiency of food or of sunshine) have previously been met with in North India and described (Wilson 1931) In Kashmir *osteomalacia* was found among those Hindu and Moslem women who were poor and yet observed seclusion. Better-class Kashmiri women can enjoy sunshine in th privacy of courtyards or on the open upper storie of their houses. Apart from the bone pains experienced when the disease is active, the deformed pelvi of osteomalacia leads to much difficulty in childbirth

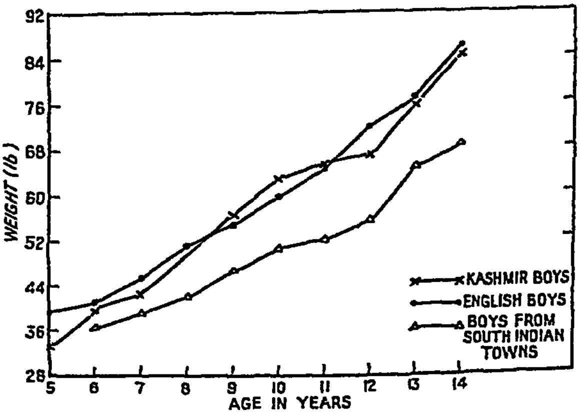

FIG. 3—Weight-curves of Kashmiri, English, and South Indian boys.

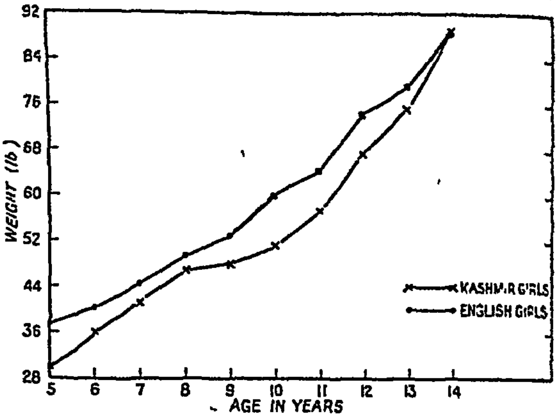

FIG. 4—Weight-curves of Kashmiri and English girls.

Beriberi has been diagnosed among village wome who had come to live in towns and had given up th use of home-pounded rice.

An interesting collection of cases of *pellagra* ha been observed at the mission hospitals at Srinagar The patients are chiefly Moslem agriculturists an herdsmen inhabiting unirrigated tracts. Fig 5 shows a typical case. He was a Moslem agriculturist aged 26 He came from a village in the dry zone, where irrigation is limited and little cereal except yellow maize is grown After the harvest the villagers eat first what other cereals have been obtained, and then until the next autumn's harvest they depend on maize.

This patient had been ill for five years, with remissions He complained of burning and itching of neck, chest, arms, and legs, together with unsteadiness in walking and inability to open his eyes. His mental condition was confused. There were pigmentation and desquamation of the skin over those areas of the body which his single loose garment had left exposed. Bilateral ptosis was present, the tongue had a red edge, the deep reflexes were exaggerated, ankle-clonus was present, and the gait was spastic.

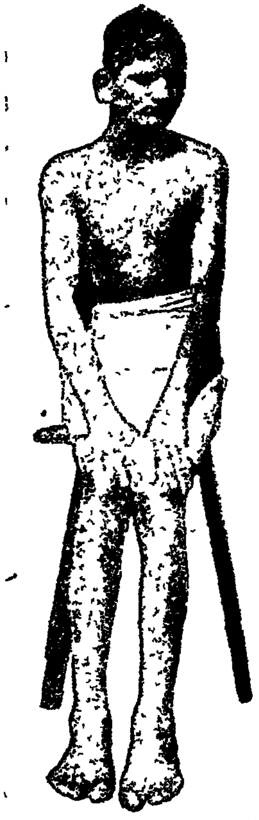

FIG. 5—A case of pellagra in a Kashmiri adult

ADDRESSES n the passes
the poorer

THE MICROGLIA sional com
of hospitals
BY PIO DEL RIO HORTEGA, M.D Ma mon among
NEUROPATHOLOGIST UNIVERSITY OF OXFOR rrison 1931),
OF THE LABORATORY OF NORMAL AND P
HISTOLOGY, UNIVERSITY OF MA

(*From the Nuffield Department of S*

geographical

ACCORDING to classical ideas, n
formed of two kinds of cells which di dren of five
function—namely, nerve cells and height and
It has been necessary to admit, n mpared with
existence of a third group of cells ldren of the
called microglia at there was

The nerve cells are the main con
nervous centres The glia cells are c among these
nature they may serve such purpose per cent of
and protection of nerve cells or may er *cent*, *and*
nutrition and in the neutralisation steomalacia,
poisons or they may produce inte ng the adult
but these functions are as yet hyp
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of the fundamental architecture grant from
nervous system, is always present ted travel in
indeed, it is intimately associated w Aykroyd and
the the auxiliary, but nevertheless ch Institute,
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Researc king up, transforming and remov ssistance of
Dr K L ual metabolism and abnorm he Maharajah
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help was als the three elements of the ies and other
medical men an tly *to disease* The r
nges, the glia cells
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Board of Education (1927) Annual Re e Chief Medical Officer
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Williams C D (1933) *Arch Dis Childh* 8, 423
Wilson D C (1931) *Lancet*, 2 10
— Widdowson E. M, and Watt, C (1937) *Ibid*, 2, 1415
Wright, R. E (1931) *Ibid*, 1, 800

CHEMOTHERAPY OF GONORRHŒA

THE results of treatment of over 500 cases of gonorrhœa with Uleron are reported by F Lana Martinez in the December, 1938, issue of a new journal, *Medicina Española* published at Corunna The test of cure consisted in administration of provocative drinks and local applications, followed, if these proved negative, by intravenous or intramuscular injections of gonococcal vaccine Even then the patients were observed for a further three or *four* weeks before they were pronounced free of the disease The author concludes that uleron has revolutionised the treatment of gonorrhœa, many patients being cured in 5–10 days without other treatment The dose required in gonococcal urethritis was obtained with a total dose of 18–21 g of uleron spread over six or seven days There were very few cases of intolerance towards the drug, and they were but slight Patients who are not cured after three courses should be considered as refractory towards uleron, and the drug should be discontinued in favour of some other method of treatment The effect of uleron on epididymitis complicating gonorrhœa is described as spectacular and dramatic, obvious improvement being noted in twenty four hours Other complications, such as cystitis and prostatitis, also proved amenable

PROTECTION AGAINST INDUSTRIAL DISEASE

Dr Donald Hunter, speaking to the medical group *of the Left Book Club on April 18, pointed out that* in many respects this country was far ahead of other countries such as Germany and the U S A where legislation was either inadequate or inefficiently *carried out Yet in the main protection was not* up to date The abolition of wool-sorters' disease was an example of efficient legislation Dry tool-grinding had been almost abolished but the methods of washing away silica particles were not always effective The safety apparatus was often under the workman's control and could be put out of action by him, this was most undesirable. The increasing use of mechanical devices often avoided the exposure *of the workman to dangerous substances incidental* to manual processes Often safe alternatives were available Thus carborundum wheels were quite harmless and could well replace sandstone wheels which frequently needed "rodding" or smoothing —a highly dangerous process In small, poorly organised and old-established industries conditions were often still bad and education of the workers and foremen was essential

Diagnosis of industrial diseases was complicated by the fact that modern methods often involved a number of separate processes Thus a rubber-worker might get lead poisoning, as lead was used to treat the rubber *Another difficulty* was that medical practitioners might not be familiar with the manifestations of industrial disease, the establishment of a special hospital for industrial diseases was desirable Only by state control and state research could useful knowledge be pooled and mistakes such as that which had occurred in the asbestos trade be avoided.

Dr Hunter showed a film illustrating a case of extreme posterior-column degeneration due to mercury methyl acetate, a fungicide used to protect wheat and oats from infection A number of such cases had occurred, quite needlessly, as relatively harmless substitutes had already been evolved by *Imperial Chemical Industries and I G Farbenindustrie at* the time when the cases arose Had these investigations been carried out by the state, this disaster could never have happened, as the knowledge would have been pooled and then disseminated throughout the industry

STATISTICS OF INFANTILE PARALYSIS

As the result of an analysis of the official Swedish statistics of poliomyelitis for the years 1921–35, Jönsson[1] arrived at the challenging conclusion that there is little or no difference in the incidence of infantile paralysis in town and country if corrections are made for the comparatively high juvenile population of the country This finding, which is quite contrary to general belief, was soon questioned by Prof Wilhelm Wernstedt[2] in a communication to the Swedish Medical Society entitled "Statistics—a factor for better or worse in medical research" *Statistics he said, can never be more than an ancillary* science In medical research it must serve, not lead, but few have hitherto had either the courage or the competence to challenge the pure bred statistician on ground that he should share with the common sense clinician Turning to Jönsson's conclusions Wernstedt pointed out that in the 15 year period under review the disease was sporadic rather than epidemic, and that the findings therefore referred only to infantile paralysis as a sporadically endemic disease Wernstedt also challenged the inclusion of abortive cases whose diagnosis is likely to be inaccurate, and which amounted to some 20 per cent of the total Again, he maintains that the distinction made between urban and rural communities may be grossly misleading: it is so easy by the stroke of the administrative pen to convert a rural into an urban community overnight

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[1] Jönsson D, *Acta med scand* 1939 suppl 98
[2] Wernstedt W *Nord. med Tidskr* March 4 1939 p 606

Yet another mistake, according to Wernstedt, was the inclusion of the rural and urban communities in the whole of Sweden, irrespective of whether they had been invaded by infantile paralysis in the period under review. These are only some of Wernstedt's criticisms, which may prove as balm of Gilead to clinicians and epidemiologists terrorised by the pure statistician.

A HOSPITAL IN JERUSALEM

THE work of the St. John Ophthalmic Hospital, which is concerned only with defects and diseases of the eyes, is well known to all who reside in Palestine and the Near East, and its benefits are available free to everyone of whatever race or creed. While the number of patients attending during the past year has been smaller than in previous years, owing to the difficulties of travel in the country, two items in the annual report, which has just been published, give some idea of the work that is being done: no less than 12,225 cases of trachoma and 840 cases of various kinds of cataract were treated during the twelve months The hospital is in charge of Sir John Strathearn, F.R.C.S.E., who is warden and chief surgeon, and it is largely because of his indefatigable work that its influence is so wide. Besides treating patients it trains Arab nurses to combat and prevent the spread of conjunctivitis and trachoma, which are a major cause of blindness in Eastern countries.

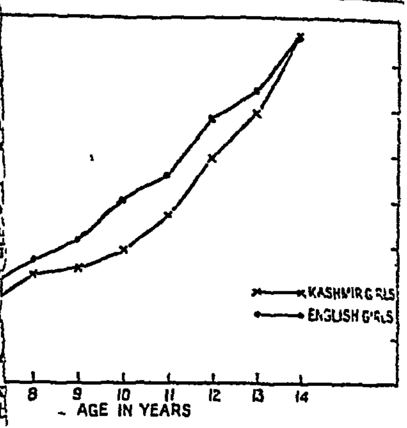
Little has been spent on the hospital for many years, and the time has come when additional accommodation and equipment must be provided. It is felt that not even the difficulties of the present disturbed condition of Palestine can be allowed to delay these improvements, and plans have now been drawn up and approved. Already £12,500 has been subscribed for these extensions, but a further £10,000 is needed to complete them.

THE CLIMATE OF MADEIRA

Monsieur Hugo de Lacerda Castelo Branco has made a comparative study (in French) of the climate of Madeira with that of other typical winter-resorts and an English translation of his work is now available (Delegaçao do Turismo da Madeira. Pp. 118). The author, *who is not a medical man,* acknowledges his debt to Piéry's "Traité de climatologie biologique et médicale." The outstanding feature of the climate at Funchal is the extraordinary equability of temperature, with only some nine degrees of seasonal range and none of the abrupt changes which are so injurious to invalids in the winter months. The Portuguese authority Narciso, with others, has described such climates as sedative over a wide range of functions, and as favourable to sleep and nutrition. Although often injurious in advanced phthisis, they are generally indicated for various breakdowns and debilities, the result of illness or overwork How different is the Madeira climate to those of most European resorts is shown by the fact that the winter warmth at Funchal is 64° F., as compared with 53° at Estoril and 46° at Mentone. Although the facts are sufficiently striking, little or no investigation has hitherto been made of the reactions that occur in various types of ill health to climatic influences at the winter health resorts, whether at the coast (as at Funchal) or at various altitudes in the island hinterland. There are indeed no records of weather in the Madeira hills.

STRUCTURE AND FUNCTION IN THE BRAIN

THE medical student who has reached that stage in his study of anatomy when he is faced with the dissection of the brain mostly tackles it without enthusiasm as one of the tasks which fall to the lot of those who have examinations to pass. With the aid of the textbook he carries out an intricate dissection and one by one identifies the structures that he uncovers. But he does not as a rule grasp the significance of the different parts of the brain, and later, when he studies psychiatry, he learns about diseases



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is, of course, much heavier in thickly populated areas
than in the country, and in London the service also
undertakes the transport of patients for whom beds
have been arranged through the Emergency Bed
Service, amounting to some twenty journeys a day

AN ALL-GLASS ATOMISER.—The *Agla Atomiser* introduced by Messrs. Burroughs Wellcome, of Snow Hill Buildings, London, E.C.1, is made entirely of glass, except for its rubber bulb, and is therefore especially suitable for solutions that may be affected by contact with metal, such as those containing adrenaline. The atomiser delivers a vapour-like spray with either oily or watery solutions, and is intended for both oral and nasal use.

CORRIGENDUM.—In an annotation last week (p 939) on the kidneys and exercise mention was made of an examination of the urine of 18 trained men taking part in the Mount Washington race. The sentence should run: "Of the specimens examined before the effort, 4 showed the slightest trace of albumin and 14 showed *none.*"

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1 The Story of the Brain. A Layman's Book of the Nervous System. By E M FitzAdam-Ormiston London. William Heinemann 1939 Pp 208 7s. 6d.

" . Speed and monotony are two aspects of the modern workman's life which demand investigation, not only by employers and employed but by scientific psychologists, for they are, consciously or unconsciously, at the bottom of much of the unrest we see around us We know little as yet of the effect of speed on the human brain or nervous system."—Lord BALDWIN, reported in the *Manchester Guardian*, April 22, 1939.

ADDRESSES AND ORIGINAL ARTICLES

THE MICROGLIA*

BY PIO DEL RIO HORTEGA, M.D Madrid, D Sc Oxfd

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(*From the Nuffield Department of Surgery, Oxford*)

ACCORDING to classical ideas, nerve tissue is formed of two kinds of cells which differ in form and function—namely, nerve cells and neuroglia cells It has been necessary to admit, in addition, the existence of a third group of cells which I have called microglia

The nerve cells are the main constituent of the nervous centres The glia cells are of a subordinate nature they may serve such purposes as the isolation and protection of nerve cells or may assist in their nutrition and in the neutralisation of endogenous poisons or they may produce internal secretions, but these functions are as yet hypothetical The microglia, or third element, although it is not a part of the fundamental architecture of the central nervous system, is always present in nerve tissue, indeed, it is intimately associated with its elements for the auxiliary, but nevertheless necessary, task of taking up, transforming and removing the products of normal metabolism and abnormal disintegration of neurons

Each of the three elements of the nervous system reacts differently to disease The nerve cells suffer degenerative changes, the glia cells show a tendency to proliferate in cicatricial processes, while the microglia cells work intensively to take up and elaborate in their cytoplasm the products of degeneration of the other elements

The pathological substratum of a nervous disease will vary according to the localisation and intensity of the anatomical alterations, the way in which the nervous elements degenerate and the glial elements react, and the macrophagic activity of the microglia That is why modern neurohistopathology is based on the search for each of the three elements that are associated in the texture of the nerve centres, and this study will be successful only if the morphology and physiology of these elements are well known

I am going to develop in this lecture my ideas on the third element of the nervous system (microglia), which has also been known by the name of Hortega cells, and I shall describe its histogenesis and its morphology in health and disease

ORIGIN OF MICROGLIA

I shall start by affirming that the microglia cells have a mesodermal origin This agrees with the opinion held by former workers, for example, Boll, Eichhorst, Lachi and His all suggested that the nerve centres contain elements of a mesenchymatous origin, different from the classical neuroglia, and they reported the presence in nervous tissue, during embryonic development and also in pathological conditions, of wandering cells of multiple form This conception of the mesodermal glia has also been maintained by later investigators Tord Robertson called mesoglia cells the indefinite elements of the nervous system, comprising those previously known by such names as naked nuclei, or round, indifferent, cuboidal and pre amœboid cells—all of which were later described by Ramon y Cajal as apolar cells or third element of the nerve centres Cajal likewise suspected their mesenchymatous nature Most of these cells, however, really belong to the oligodendroglia and are of *ectodermal* origin

The appearance of phagocytic corpuscles in pathological conditions also led to the belief that the nerve centres contain mesodermal elements—these being regarded by some authors as the source of the *compound granular cells* and the rod like cells of Nissl found in many brain diseases

But as the idea of the mesenchymatous cells was based on intuitions rather than on objective findings the vast majority of neurologists were still sceptical about their existence and remained attached to the conception of purely ectodermal neuroglia Robertson, though he described these mesoglia cells in a very objective way, was unable to interpret clearly the forms he observed, and his work was not sufficiently appreciated Cajal also was convinced that mesodermal cells existed in the interstitial network of the nerve centres, though he had no actual proof of it My own work started from Cajal's studies I was able to show that, contrary to general belief, cells without processes did not in fact exist in the nerve centres and in 1919 I found that Cajal s third element, like Robertson's mesoglia cells, was formed by two kinds of cells which by their origin, shape and functions differed considerably from one another One of them, the microglia, is the true third element since it is actually mesodermal, the other, the oligodendroglia, is simply a variety of ectodermal neuroglia

The microglia has a mesodermal meningeal origin, has much ramified processes, has migratory activities and macrophagic functions, is more abundant in the grey than in the white matter, and is included in the general nervous and glial framework as an annexed element The oligodendroglia, on the other hand, has an ectodermal ependymal origin, its processes accompany and surround the nerve fibres, it has no phagocytic activities, it is very abundant in the white and scarce in the grey matter; and it is a fundamental constituent of the general neuroglial network. The two elements are thus quite different in form and function, and their responses to disease are correspondingly different and should be described separately to avoid confusion Yet errors of interpretation are still found in the recent literature

The microglia arises from meningeal polyblasts at a late period of embryonic development and after birth it continues to penetrate into and spread throughout the nerve tissue During their migration through the nerve tissue the microglia cells have a round or pseudopodial shape, *according to their* motility, later they become ramified and when they reach their final position in the nerve tissue they have small dark nuclei surrounded by scant cytoplasm with two, three or more slender, curving, branching and prickly processes. These processes end freely, they do not anastomose with each other or with neuroglial elements

The microglia is the part of the reticulo endothelial system—using the term in *its fullest sense*—belonging to the nerve centres Its essential properties, so far as they are recognised, include the uptake of colloidal particles and the devouring of *red blood* corpuscles and cellular debris Its main physiological function is the elimination of the waste products of neuronal metabolism [illegible]

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* A lecture delivered in the University of Oxford on Nov 2, 1938.

The microglia takes an active part in all inflammatory and necrotic processes of the nerve tissue, and when mobilised and serving as a macrophage it assumes many different forms, the best known being the compound granular cells and the so-called rod-like cells discovered by Nissl.

It is possible that microglia cells exist in early stages of embryonic development but they become visible only in the last period, when the meningeal and vascular organisation of the brain is well advanced. They are to be seen in large numbers in the superficial white matter of the brain-stem, and in the deep regions of the cerebral hemispheres, of advanced embryos or newborn animals, where they show a very irregular distribution. The most important fact in relation to the origin of the microglia can be verified in the small laboratory mammals—i e, mouse, rat, rabbit and cat; for in these animals it is seen to appear in superficial parts of the brain, immediately underneath the pia-mater, earlier than in the neighbourhood of the ventricles. This proves that the microglia in its origin is not related to the ependymal cells.

There are in the brain two main sources of microglia: (1) the superior tela choroidea, which lines the cerebral trigonum and the optic thalamus, and (2) the pia-mater, which lines the cerebral peduncles. In the cerebellum the main source of microglia is also located in the pia which lines white surfaces, and especially in the inferior tela choroidea. In the bulbopontine region, as also in the spinal cord, the microglia arises similarly from the pia-mater and its foldings. Besides these main sources, the microglia also arises, although to a much smaller extent, from pial elements of the cerebral and cerebellar surface and mainly from the adventitial layers of the large and medium-size blood-vessels. From all these regions the microglia cells enter the encephalon in large numbers and rapidly spread throughout the nerve tissue. This takes place in a short time, and within ten days after birth the microglia is present in all parts of the central nervous system.

Which are the elements of the pia-mater that, on entering the nerve tissue, give rise to microglia I do not know with certainty. Present histological methods do not detect the initial stages of transformation of microglioblasts. Nevertheless in the pia and adventitial connective tissue nuclei resembling lymphocytes are present in large numbers in those places where the microglia is formed, and I am inclined to believe that those nuclei are the mother elements of microglia. The lymphocyte-like bodies, corresponding to the polyblasts of connective tissue, immigrate into the nerve tissue, and this might explain why microglia cells are able to develop migratory activities and amœboid and pseudopodial movements, and may be converted into macrophages.

MORPHOLOGY OF THE CELLS

In the first stages of formation of the microglia there exist under the pia-mater laminar, cuboidal or round cells which spread irregularly or form a continuous layer which is thicker at the points where the microglia arises In the second phase the nerve tissue contains round cells with outgrowths and [illegible]dia which begin to branch.

[illegible] centres of young mammals contain [illegible]bodies, with pseudopodial processes, and [illegible] present in surprisingly large numbers [illegible]. But [illegible]tter of the hemispheres and the [illegible] the [illegible]n These elements are young microglia [illegible]es, mo[illegible]r less spherical in shape, which give out blunt tuberous expansions and short processes with a tendency to divide.

The microglia cells have two sorts of movements: (1) progression, by which they migrate through the tissue, and (2) emission of pseudopodia, which leads to their assuming ramified forms The forms with short outgrowths last only as long as the microglia cells wander through loose tissue. As soon as the tissue becomes more compact they give out a number of processes—long or short, thick or thin—which show at first bifurcations and later ramifications When they finally reach the places where they are to remain, a part of their outgrowth retracts; but another part persists, becoming thread-like and giving rise to secondary and tertiary branches with retractile thorns. All this tends to increase their surface. In the first period the shape of the microglia cells depends on the amœboid and progressive movements; in the second period it also depends on the structure of the tissue through which the cytoplasmic expansions spread. In moving through narrow spaces along the processes of neurons or around their bodies, the microglia cells often assume a stretched, bipolar or laminar appearance.

In adult animals the microglia consists of elements with dark nuclei which may be round, oval, triangular or elongated, surrounded by a small amount of spongy cytoplasm. This cytoplasm gives out two or more processes which become thinner as they divide more and more, in secondary and tertiary ramifications, all of which have a large number of smaller branches, which give them a prickly appearance. The processes end freely as bunches of short filaments. Although these morphological characters are to be found in all vertebrates and are constant, in their essentials, there are many variations of the general type, among which are the monopolar, bipolar, multipolar and laminar cells.

All parts of the central nervous system have microglia; but it is distributed in accordance with the general architecture and is more abundant in the grey than in the white parts. The microglia cells are not equidistant, but each has its own zone of influence. Their processes rarely cross and never form plexuses.

These are, in brief, my observations on the normal characters of microglia They have been amply confirmed, although some authors have been slow to accept my ideas. It is always difficult to replace deeply rooted ideas, and some fundamental conceptions, such as the mesodermic origin of microglia, are still under discussion. Embryological observations, however, demonstrate its mesenchymatous nature and they are supported by the physiological observation that it behaves as a mesodermal element. Certainly no-one has shown that non-mesodermal elements in the body can act as microglia does.

FUNCTION OF THE MICROGLIA

The main differences of behaviour between the microglia and the macroglia are intimately related to their origin. The macroglia—i e., the astrocytes and oligodendrocytes—is ectodermal and never has macrophagic functions. The microglia, on the other hand, is mesodermal and its main function is phagocytosis. Nevertheless, the morphological analogy between fat-granule cells and oligodendroglia continues to be a source of misunderstanding.

In this period of nervous histopathology—which might be called micro- and oligo-dendroglial—in which all neurologists study the behaviour of the two cellular types in disease, it is important to know well their reactive potentialities. The activities of microglia have been thoroughly explored in normal and in pathological conditions and though they are not yet completely known it may be affirmed that all phagocytosis[†] in nerve centres is exclusively carried out by *microglia cells*. It comes into play in all focal or diffuse disintegration of the nervous tissue, in all degeneration of nerve and glial cells, in acute and chronic inflammatory processes, and also in necrotic and hæmorrhagic conditions. The microglia, therefore, preferentially takes up residues of neurons and their abnormal metabolites, red blood corpuscles and dead cells. Its phagocytic activities can be summarised in the words neurophagia, hæmophagia and cytophagia.

As long ago as 1919 I was able to observe in microglia the characteristic properties of Aschoff's reticulo-endothelial system, especially hæmophagocytosis. Since then many workers have tried to show that the microglia in the nerve centres is the equivalent of the reticulo-endothelial system, and that it has the general and specific functions attributed to that system by Aschoff, Kiyono and others. F. J. Asua, in my laboratory, later developed this idea.

It is known that the reticulo-endothelial system is made up of elements which all have similar functions, such as storage of colloidal particles, destruction of erythrocytes, and phagocytosis and chemiopexis. The products taken up are digested and transformed; hæmoglobin is broken down to form biliary pigments and hæmosiderin. The microglia has most of these functions, but as it has not been shown to take up colloidal particles doubt has been cast on its being really a part of the reticulo-endothelial system. Phagocytosis and hæmophagy are the only functions of microglia that can readily be demonstrated, and attempts to prove that it can take up and store acid dyes and colloidal particles, without previously producing brain injuries, have so far met with little success.

This resistance to the storage of certain substances may be put down either to specialisation of the microglia or to the existence of a hæmo-encephalic barrier that prevents the passage of colloidal matter. In the first case the microglia would be specially adapted to the inclusion and transformation of katabolic products and of nerve waste, phagocytosis of red blood cells being a fundamental property that it shares with the reticulo-endothelial system. If on the other hand there is a hæmo-encephalic barrier, the microglia may be able to take up carmine, indian ink, pyrrol blue, trypan blue, &c., if the impermeability of the *vascular endothelium* has previously been destroyed. Observations made after experimental brain injuries have shown that microglia cells can in fact take up dyes which reach their neighbourhood.

The experiments of vital staining demonstrate that dyes can reach the microglia cells provided the hæmo-encephalic barrier is removed in some way. When this barrier does not exist, as in pure cultures of microglia, carmine is rapidly taken up by the cells, as I. Costero was able to show in my laboratory.

All these facts demonstrate that microglia is part of the reticulo-endothelial system. Among its functions phagocytosis is the one that is preferentially carried out.

THE MICROGLIA IN DISEASE

I shall now turn to the functions of the microglia under pathological conditions.

I have already pointed out that during the immigration of the microglia cells into nerve tissue they undergo a complete morphological evolution, the primitive rounded forms being transformed into stellated ones with many ramifications. In disease, as these cells get into motion and take an active part, they show a new change in a reverse direction: by increasing retraction of their processes, they pass from the ramified forms of the resting state into the rounded one which is characteristic of a state of movement and cytoplasmic repletion.

The evolutive cycle of microglia cells has three morphological phases, and these are related to the two essential properties of their cytoplasm—namely, plasticity and amœboidism. The first phase is embryonic, amœboid and kinetic; in the second the cells are stabilised and settle down in the nervous network; in the third they regain mobility and amœboidism and become macrophagic. These three phases correspond to the stages of wandering cells (embryonic cells, movable but resting), adult cells, and mobilised or active cells.

Microglia cells in the resting state do not seem able to make movements of progression, but their cytoplasm may have a certain plasticity and show amœboid movement with emission and retraction of cell pseudopodia. Its potential properties—tropism, taction, and gliding movement—are held in reserve. When destruction of nerve tissue induces activity in the microglia, the nearer cells are the first to come into action, but they are soon followed by others situated further away which pass through the tissue by means of amœboid or gliding movements.

The capacity of microglia for migration has sometimes been denied but the evidence is conclusive. In 1919 I showed by a simple experiment that it is capable of rapid movements and of starting phagocytosis very early: a small region of the brain was destroyed with a hot needle; twelve hours later microglia was mobilised around the wound and after twenty-four hours the damaged area was completely invaded by microglia cells with great macrophagic activity. Many other workers have also observed that in the places destroyed by experimental burning microglia appears. These cells must come from neighbouring regions. Costero has demonstrated in cultures that microglia cells not only send out pseudopodia but make movements of progression.

As the microglia cells are mobilised and take on phagocytic functions, their shape changes; they retract their long processes, give out new pseudopodia and ingest red blood cells and cellular fragments. The first morphological change is an increase of volume, which occurs earlier in the dendrites than in the body of the cell; the processes become thicker and their outline appears angular and thorny. In the second phase the processes retract and thicken still further, and the cellular body increases in volume, assuming a reticular structure.

In moderately severe inflammatory processes the microglial changes stop at this point, but one often finds long rod-like forms and also laminar ones surrounding the nerve cells and blood vessels. With the retraction of the processes and the polarisation of the cytoplasm the nuclei become elongated and the cells assume a stretched-out bipolar form, sometimes of remarkable length. These types never fail to appear in slow inflammatory processes—e.g., general paralysis—themselves following the same direction as the pyramidal cells, with the apical processes of which they get closely in touch. The most typical rod-like cells have very large, straight or curved nuclei; the scanty cytoplasm surrounding them is extended along the main axis in two long thin bands, often with a number of collateral branches. By means of specific stains it is often possible to show the presence of fat droplets and iron deposits H. Spatz and A. Metz have observed that the microglia cells are the only ones that give a positive reaction for iron in general paralysis; but these cells do not normally give the iron reaction.

[†] The term phagocytosis here refers to macrophagic activity and is not meant to include the microphagocytic function of the polymorphonuclear leucocytes.

Around the nerve cells and blood-vessels in most inflammatory conditions may be seen flattened microglia cells corresponding to the first stages of microglial alteration. If the macrophagic activities of the microglia are only slow and of moderate intensity the morphological changes do not go further than hypertrophy or the assumption of laminar or rod-like shapes, but if on the other hand they become intensive, in places where degeneration or destruction has taken place, the cells load themselves with ingested waste materials and assume globular or rounded forms which are very similar to the embryonic types. In the first period the body cytoplasm increases in size while the processes decrease; in the second period the processes become fewer and less ramified; in the third period the processes retract still more and grow thicker, and the body cytoplasm swells and takes a vacuolated appearance In the fourth period the processes have retracted almost completely and the cell has a spheroidal or lobular aspect with tuberosities and short pseudopodia Finally, the last trace of processes disappears and there remain spherical bodies with a reticular vacuolated cytoplasm. These are the scavenger or compound granular cells—the *Gitterzellen* of the German authors

During these metamorphoses the microglia cells, acting as scavengers, become loaded with phagocyted products which very soon are transformed by their cytoplasm Within 24 hours of experimental injury compound granular cells appear in the brain, and they are also to be found very soon in cases of brain softening. In hæmorrhagic processes the microglia shows an extraordinary greediness for red blood-corpuscles, which it rapidly takes up and transforms. Five or six days after a hæmorrhage microglia cells loaded with fat and iron can be seen around and inside the hæmorrhagic foci

The fat-granule cells, whose origin has been so much discussed, arise essentially from the microglia, although they can also be formed by the perivascular histiocytes as well as the other elements of the reticulo-endothelial systems. In fact some of these elements are in form and function so similar to microglia that confusion can arise

Neither the astrocytes nor the oligodendrocytes ever give rise to fat-granule cells. They may contain fat droplets as products of their own degeneration; granules of exogenous origin may be adsorbed on their surface; and they may contain hæmosiderin. But the hæmosiderin has entered the cell in solution; astrocytes and oligodendrocytes never contain granules of iron or globules of fat ingested in phagocytosis, and though they can be passively loaded with material, they are unable to take it up actively. Active phagocytosis in the nerve centres is exclusively carried out by the microglia cells

What happens later to the substances which the microglia has taken up and transformed is uncertain, but it is reasonable to suppose that they are utilised by the microglia itself, since its volume increases and it rapidly begins to proliferate. On the other hand there are also grounds for believing that the microglia cells, t[illegible] their capacity for displacement, can convey[illegible] to the blood-vessels.

SUMMARY

Nerve tissue contains a type of cell with properties corresponding to those of the reticulo-endothelial system The chief function of these cells (the microglia) is the phagocytosis of waste products, and, if need be, of red blood-cells.

The microglia arises from meningeal polyblasts which immigrate into the nerve tissue and assume a stellar and ramified shape. Even when they are in apparent rest, microglia cells remain capable of migration, and under pathological conditions they are mobilised to undertake phagocytic activity.

Phagocytosis in nerve centres is a specific function of microglia; despite opinions to the contrary, neither the astrocytes nor the oligodendrocytes take part in it

Microglia cells take up the products of disintegration of the nerve tissue, digesting and elaborating them, and making them finally disappear, probably by transporting them to the blood-vessels.

These ideas have been developed in my papers from 1919 to 1921, and though they have been discussed in many subsequent papers by other workers, almost nothing new has been added to our knowledge of this subject Today these ideas are widely accepted.

INFANTILE DIARRHŒA *

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(*Concluded from p 973*)

Treatment

THE treatment of infantile gastro-enteritis is fraught with difficulty, with anxiety, and frequently with disappointment The more deeply the matter is studied the more evident it becomes that an intimate knowledge of the normal metabolism of the infant is of paramount importance.

WATER METABOLISM

The outstanding feature of these babies is the dehydration, and this is responsible for most of the other clinical signs. This demands immediate attention, and for a proper understanding of the responsible factors, and therefore the appropriate treatment, the physiology of water metabolism must be studied in detail

Approximately two-thirds of the weight of the human body is water. Actually for the adult the figure is about 60 per cent, but the water content of the infant is rather more and has been estimated to be about 70 per cent. (McQuarrie 1933) Of this body water some two-thirds is present within the cells—i e, intracellular or "living water"—and the remaining third is found in the circulating fluids (McCance 1938). The blood volume according to body-weight is relatively much higher in infants than in adults. Infants seem to have blood volumes too large for their weight but too small for their body surface (Rowntree and Brown 1929)

Within recent years much research work has been devoted to the measurement of the water balance of the body and the various controlling factors, with the result that information of practical value has been forthcoming. In health there is a delicate adjustment between water intake and output, so that the body content remains remarkably constant The intake of water comprises the water drunk, the water content of the food, and the water resulting from the oxidation of food within the body The output of water takes place through the kidneys, the lungs, the skin, and the bowels, whereby the temperature of the body is controlled and various waste products are eliminated With regard to water loss by the various routes, that lost by the skin and lungs is least subject to variation, in fact the output by these routes remains practically constant irrespective of the fluid intake The water lost in the urine is subject to very wide fluctuations, and, other things being equal, the urine output reflects accurately the water intake In cases of severe deprivation of water the urine excretion may practically cease entirely for a time, but loss to some extent continues through the skin and the lungs On the other hand, excessive fluid intake produces great augmentation of urine output without appreciable increase by vaporisation Levine et al (1938) proved these facts in a comprehensive study of the water exchange of infants Their figures for healthy infants showed that of the daily water loss from the body *45 per cent* was excreted *through the skin and lungs* and 43 per cent by the urine, but their figures were subject to wide variation Signs of serious dehydration appear when the human body has lost 10 per cent of its water content (Rubner, quoted by Rowntree 1922), which is approximately 6 per cent of the total body weight (Coller 1936) The loss of *20 per cent of the body water will result in death* (Maddock and Coller 1937)

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* Ingleby lectures delivered at the University of Birmingham on March 28 and April 4

It is generally accepted that a healthy infant requires about 2½ oz of water per lb of body weight per day to maintain water balance, and recent carefully controlled investigations have proved the accuracy of this figure Thus the body of a healthy baby weighing 12 lb contains some 6½ pints of water, and for the maintenance of normal water metabolism the daily intake will have to be 30 oz (approximately 1 5 c cm of water per calorie) If this infant becomes evidently dehydrated, as manifested by a dry tongue, a depressed anterior fontanelle, a dry wrinkled skin, and sunken eyes, it will have lost only about ¾ lb in weight, the equivalent of 12 oz of water These physical signs are due to a loss of intracellular and extracellular fluids, the volume of the blood plasma tending to be maintained at the expense of the interstitial fluid In consequence, to successfully combat these physical signs of dehydration, the volumes of both interstitial and intracellular fluids must be restored to normal (Butler et al 1933) To restore such an infant to a normal water metabolism in twenty four hours, it will be necessary to provide it with a total of 42 oz of water 12 oz to combat the dehydration and 30 oz for the normal requirements—i e, about 3½ oz per lb of body weight Moreover, this quantity makes no allowance for the excessive loss that may continue In other words, so long as a baby suffering from gastro enteritis shows clinical signs of dehydration, its daily water requirements may be estimated to be about 3½–4 oz per lb of body weight

SALT METABOLISM

Water and salt metabolism are intimately associated, and an understanding of the one necessitates also an understanding of the other, particularly the part played by sodium chloride Infants suffering from gastro enteritis lose considerable amounts of salt as well as water, and the replacement of these substances on both a quantitative and a qualitative basis forms a very important part of the treatment Sodium constitutes over 90 per cent of the total base of the extracellular body fluids (McCance 1936), and the average diet of an adult contains 6–12 g of sodium chloride per day This amount, however, is more than adequate for the physiological needs of the body (Falconer and Lyall 1937), and the excess is excreted in the urine The human body cannot store sodium chloride If, therefore, the amount excreted rises for any reason, a corresponding increase in intake must take place if a deficiency of salt is to be avoided. Cow's milk contains about 146 mg of sodium chloride per 10 c cm A healthy baby weighing 12 lb will be taking about 20 oz of milk per day —i e, a sodium chloride intake of 0 820 g —and it may be accepted that this amount is adequate for the maintenance of normal health A pint of normal saline contains six times this amount of salt Alternatively, about 3¼ oz of normal saline contains the same amount of sodium chloride as is present in one pint of cow's milk

The blood changes in infantile diarrhœa have been studied by many workers, but widely varying values for the blood chlorides have been recorded Hoag *and Marples (1931) analysed the findings in* 79 infants before the institution of treatment, 35 of these had a chloride content of the serum or plasma above the average normal value, whereas 14 had values at or below the average Some of the children examined by Maizels and McArthur (1929) had high values for plasma chlorides, but in others the chlorides *were within normal limits or reduced below normal* In a further series, however, that they examined the blood chlorides were raised (Maizels and McArthur 1930) Cooper (1937) found that in acute gastro-enteritis the serum chloride tended to be high, whereas in chronic diarrhœa low values were obtained. He suggested that in acute gastro enteritis there was a loss of water from the circulating blood, and that the water left the blood stream without its full quota of chlorine The blood of 21 infants suffering from acute gastro enteritis, and before any treatment was instituted, has recently been examined at the Birmingham Children's Hospital (Aldridge 1939), and the average value for plasma chlorides was considerably above that obtained in a series of normals Furthermore, even higher values were obtained in some after the administration of saline Hartmann (1928) suggested that the administration of sodium chloride was deleterious in that it led to a further accumulation of chloride, and our work tends to confirm this view On the other hand, Hoag and Marples (1931) contended that the administration of an amount of fluid sufficient to overcome the oliguria and maintain an adequate output of urine did not lead to an abnormal accumulation of chloride Their view implies that the renal function for the excretion of chloride is unimpaired in infantile diarrhœa, but this is not necessarily true On the contrary, there is evidence available pointing to definite renal deficiency Some cases of infantile diarrhœa were described by Maizels and McArthur (1930) in which the blood was more alkaline than normal and the osmotic pressure of the plasma increased, yet the reaction of the urine remained acid They thought that this occurrence was due to deficient excretion of base consequent upon renal damage In this connexion, too, it is noteworthy that in diabetic coma the renal function may be so disturbed that chlorides are not excreted even when the plasma chlorides are considerably higher than normal (Fullerton et al 1932) Investigations of this problem are now being pursued in the research laboratories of the Birmingham Children's Hospital

ADMINISTRATION OF FLUIDS

With all these facts in mind it will readily be appreciated that the correct treatment of the dehydration and its concomitant disturbances is far from simple The mode of administration, quantity, and quality of the fluids are of the utmost importance. Theoretically, scientific treatment is only possible with the aid of frequent routine blood analyses, but in practice this is most undesirable, indeed impracticable, in these little patients. When vomiting is not a feature, much fluid can be given by mouth. By tradition normal saline has been considered most suitable, but in the light of recent knowledge and in practice it has several disadvantages On account of its distinctly salty and rather unpleasant taste, infants are not willing to drink an isotonic salt solution for any length of time. Furthermore, if it should be taken in liberal amounts, there is a danger of overloading the blood with sodium chloride and thus taxing a kidney already damaged by toxæmia to excrete the excess To overcome these objections a salt solution of half the strength of normal saline, flavoured with orange juice, has been introduced and in practice has been found to be very satisfactory. It has a pleasant taste and is taken freely and for long periods without objection. A thirsty dehydrated infant may readily drink 1½–2 pints of this fluid in twenty-four hours This quantity will in most instances contain an adequate amount of sodium chloride. Some prefer a glucose solution, with or without sodium chloride, but here caution is needed Glucose is readily absorbed from the upper part of the alimentary tract If, however, there is failure of absorption owing to increased peristalsis or other causes, the unabsorbed glucose will undergo fermentation and the diarrhœa will be aggravated In consequence, it is inadvisable to use as a routine a glucose solution stronger than 5 per cent. There is experimental evidence to show that mixed sugars are more readily absorbed than a single sugar (Ross 1938), and clinical practice tends to confirm this. The sugar mixture of Horlick's malted milk and Mead's Dextrimaltose have a useful place in treatment in this connexion.

If, on account of vomiting, fluid given by mouth is not retained, or if for other reasons an adequate amount is not taken, then its administration by other routes becomes a necessity. The parenteral routes available are subcutaneous and intravenous injection. Intraperitoneal injections are favoured by some, but in my experience these injections have nothing to commend them. Untoward reactions have been encountered in many instances, and alarming reactions in several; so I have ceased to use this route For *subcutaneous injections* the fluid of choice is normal saline; in fact no other is used The injection may be a single one, the amount averaging 50–100 c cm., or a continuous drip. Since the introduction of small-bore needles the latter method is painless and more satisfactory in that a much larger amount can be given without discomfort and with less danger. The rate of injection recommended is 10–30 c cm per hour up to twenty-four hours, but obviously this must vary, depending on the rate of absorption; if the rate is too rapid, local œdema will develop.

Intravenous injections may consist of normal saline, glucose, or blood, and the injection may be a single one or a slow continuous drip In the former case the amount of fluid injected will be governed by the weight of the baby, but in no instance should the time taken for the injection be less than half an hour As a routine the amount injected should be about 10 c.cm. per lb. of body-weight, but in the presence of any bronchitis or other respiratory complication not more than half this quantity should be given. If the continuous-drip method is employed, the average rate of flow recommended is 20–30 c.cm. per hour, and the total amount in twenty-four hours should not exceed 600 c cm. (one pint) The indications for continuous intravenous therapy given by Wilmer (1938) were severe dehydration, cyanosis, and clinical evidence of acidosis She recommended that the quantity of fluid should be 2 oz. per lb of body-weight in twenty-four hours, and the fluid she used was normal or half-normal saline containing 5 per cent glucose The amount of fluid given intravenously was decreased as that given orally was increased, so that the total fluid taken by the two routes remained constant at 2 oz. per lb. of body-weight. In my experience this amount of total fluid is inadequate to restore normal hydration, and it is probable that some of these infants received an excessive amount of sodium chloride It is to be noted that 30 per cent. of her patients died from bronchopneumonia, which is a not infrequent complication of intravenous therapy. The dangers of intravenous injections are too great a quantity and too rapid administration If the quantity injected is too great, fluid passes out of the circulation and produces œdema (Cohen et al. 1933, Coller et al. 1936, and Orr 1936), in particular pulmonary œdema, when a pneumonia commonly supervenes. If the rate of administration is too rapid, the burden thrown on the heart as the result of the sudden increase in the volume of the circulation will cause collapse and death from cardiac failure

Passing to the fluids used, although in the past normal saline has occupied a foremost place, in the light of recent knowledge, particularly regarding the high blood-chlorides in the acute cases, caution must be exercised. Knowing something of the sodium chloride requirements in infancy, it will be appreciated that in the past excessive amounts must have been administered, and it is more than likely that in some cases this has contributed to a fatal issue The practice of using normal saline solutions as a routine for all parenteral administrations of fluid without regard to whether sodium chloride is needed or not cannot be too strongly deprecated. An isotonic glucose solution (5 per cent) has much to commend it. The glucose can be easily and rapidly metabolised, and the water so essential to restore normal water balance is available The food value, too, is appreciable, in that a pint of a 5 per cent. solution of glucose supplies 110 calories in a readily assimilable form When it is not possible to obtain blood analyses, a 5 per cent. solution of glucose is a much safer fluid to use than normal saline With the restoration of normal water metabolism any excess fluid will be excreted in the urine, and the dangers of pulmonary œdema are very much less than with a saline solution

BLOOD-TRANSFUSION

Blood-transfusion has been very extensively used in the treatment of infantile gastro-enteritis, and in the right case has everything to commend it Here we are supplying a fluid that will remain in the circulation and a fluid rich in antibodies and in antitoxins which must be of inestimable benefit to the toxic and dehydrated infant Clinical experience, however, has taught that transfusions of whole blood have not invariably produced the anticipated improvement On the contrary, the frequency with which the reverse effect was encountered led to a detailed and systematic study of the problem A hæmoconcentration, with a rise in the red cell count and the hæmatocrit reading, is an almost constant accompaniment of the dehydration of infantile diarrhœa, particularly in the acute cases These infants are not suffering from a deficiency of either hæmoglobin or erythrocytes, and therefore blood transfusion is definitely contra indicated In the light of this investigation the current practice is to limit the use of whole blood transfusions solely to those infants suffering from a true anæmia as shown by a detailed blood examination In other cases the red cells transfused must embarrass still further the circulation, they have to be destroyed and their products excreted, thus adding a further burden to the body and perchance prejudicing a successful issue Another point of importance in connexion with blood transfusion is that blood grouping alone is not sufficient to prevent reactions which, though rarely severe, are certainly undesirable Since the introduction of the routine of direct testing in every case of the blood of the donor against that of the recipient, reactions of any kind to transfusion have been entirely eliminated.

In general, blood-transfusions are indicated in those children in whom dehydration is associated with toxæmia, and in some of these trial has been made with blood plasma transfusions (Aldridge 1938) Invariably the concentration of the blood was reduced and immediate clinical improvement was usually obtained There are certain technical difficulties to be overcome before this line of treatment can be widely employed, but the results so far obtained point to its being a valuable line of treatment in certain selected cases Further results will be awaited with interest

In all cases the total amount of fluid that the baby receives in twenty four hours, by all routes, is of fundamental importance It has been found in practice that the day-to day charting of the fluid intake in ounces per lb of body-weight has simplified this investigation and been of valuable assistance

The other problem that constantly arises is how much sodium chloride should be given It is not yet possible to put this procedure on a quantitative basis, and the decision has to be left to clinical instinct and such rough measures as have already been mentioned It has been suggested that an approximate guide can be obtained by continuing the administration of saline until such time as the urine chlorides have returned to normal This method is, however, open to certain fallacies, as has already been mentioned (Fullerton et al 1932 and Maizels and McArthur 1929) The administration of excessive amounts of sodium chloride will almost certainly cause œdema According to Shelburne and Egloff, the sodium ion is the œdema producing element rather than the chloride ion (Orr 1936) In favourable cases the œdema will disappear if the total fluid intake is reduced and the sodium chloride entirely eliminated In some cases where pulmonary œdema has developed it may be advantageous to give a small intravenous injection of a hypertonic glucose solution (10–20 per cent) to withdraw the excessive fluid back again into the circulation If the patient's weight, the percentage of salt in the normal body, and the plasma chlorides were known, Coller et al (1938) claimed that the individual patient's initial requirements could be accurately assessed. Unfortunately this procedure is not yet applicable to infants

SUPRARENAL CORTEX

It will be observed that the blood changes in infantile gastro enteritis in many respects simulate those encountered after removal of the suprarenal cortex in animals In such animals a concentration of the blood is one of the most constant features, and experimental evidence points to this being due to a withdrawal of fluid from the blood plasma and from the interstitial spaces The injection of an effective amount of cortical hormone brings about a dilution of the blood and an appreciable diuresis (Harrop 1936) Besides this hæmoconcentration, a drop in blood pressure and a rise in blood urea and non-protein nitrogen, with nausea, asthenia, wasting, and increased susceptibility to infections, are common to both Thus, on experimental grounds there appears justification for the administration of suprarenal cortical hormone to infants with gastro enteritis This method of treatment is now being explored, but the available evidence is insufficient for a considered opinion It appears that in some cases benefit has accrued from its administration, but nothing in the way of dramatic results has been seen Much more work remains to be done before its place in the therapy of infantile gastro enteritis can be adequately assessed

FEEDING

A period of preliminary starvation, during which the infant is receiving only water, glucose, and salt, may be prescribed for the first twelve to twenty-four hours Thereafter feeding of some kind must be instituted. The various foods available are innumerable, and there is no consensus of opinion as to the best It is, however, generally agreed that fats are tolerated badly and should be avoided or at least severely restricted Cow's milk mixtures are seldom tolerated well, and I have a preference for dried milks Several dried milks are available with a low fat and full carbohydrate content, and the particular one used may be left to individual preference Some authorities deem it important that the milk should be acidified to supplement a possible gastric deficiency and to diminish bacterial growth, but on clinical grounds this does not seem to be necessary in every case Protein milk of one variety or another is strongly advised by some, but success is not always forthcoming The important point is that, when feeding is begun, the feeds should be small in quantity and dilute in quality and advances in both directions made with caution On account of their low fat content and therefore poor calorie value these foods should not be continued for very long, provided that the gastro intestinal symptoms have abated The change to a more balanced feed may be made as soon as the clinical condition will allow

Apple diet —Treatment of all varieties of infantile diarrhœa with what is now called the apple diet has been widely recommended both in Europe and in America The routine advised is to give 1–2 oz of ripe raw grated apple every two hours, day and night, for one to two days, and it is claimed that a rapid abatement of the diarrhœa and toxæmia is thereby obtained There is considerable doubt as to what portion of the apple produces the beneficial effect, but most writers consider that it is due to the pectin I have given this form of therapy a reasonable trial on several occasions and have to admit that in my experience the results have been most disappointing, indeed not even temporary improvement has been obtained

DRUGS

Drugs are useful only for the treatment of symptoms in infantile diarrhœa A timely dose of castor oil in the earliest stages of the disease may be beneficial, but afterwards aperients are not only useless but may be harmful. Astringents in general are contra-indicated, for they favour retention and therefore the absorption of toxic products from the alimentary tract. Opium, however, has an important but strictly limited place in treatment; it must be used with the greatest caution and should be combined with belladonna The restless crying infant with numerous watery stools and severe toxæmia may gain great benefit from the administration of small doses of opium and belladonna The restlessness is relieved, the colic abates, the excessive intestinal secretions are reduced, the desire for food returns, and sleep follows Alcohol is another useful drug of whose value I am convinced; it is a sedative, it is a food, and it is absorbed from the stomach, all of these actions being beneficial The newer chemotherapeutic drugs—sulphonamide and its compounds—are on trial, but I am not yet in a position to offer opinion as to their efficacy.

NURSING

I cannot conclude my remarks on treatment without paying tribute to the nursing staff of the Birmingham Children's Hospital for their unremitting care and management of these babies. It is not often that one has an opportunity of expressing in public the very real appreciation of the nursing profession that the medical profession has, and I do not intend to let this opportunity pass. Those who have been called on to treat babies suffering from gastro-enteritis know full well how much success or failure depends on the nursing Nothing can be more disheartening than to find that, after days and weeks of fighting for the life of a baby, one's efforts have been of no avail These disappointments, however, have never daunted the perseverance, the patience, or the enthusiasm of the nursing staff for the welfare of these infants I am well aware of the high mortality, but I am equally conscious of the fact that, but for the sterling nursing services placed at my disposal, this mortality would have been very much higher.

Prophylaxis

Realisation of the prolonged invalidity and grievous mortality of infantile diarrhœa compels a study of its prophylaxis. First and foremost comes breast-feeding This is nothing new, its importance has been emphasised by discerning pædiatricians for generations, but it has to be admitted that in spite of all this the incidence of breast-feeding is declining. Spence (1938) has estimated that at the present time 20–30 per cent of babies are artificially fed from birth in many if not most of our big towns, and that not more than a third of the mothers of these towns are fully feeding their babies until the sixth month Until this state of affairs can be rectified, infantile diarrhœa will continue to be a major problem among the diseases of early life

Another very important precautionary measure is prompt treatment at the very first sign of any gastro-intestinal upset, as manifested by an undigested, loose, or watery stool. The immediate cessation of all feeds and the giving of liberal amounts of plain water or half-strength saline would, I am convinced, abort many cases of infantile diarrhœa Rest to the alimentary tract at this stage is of inestimable value and in most cases is all that is necessary.

Lastly, the part played by parenteral infection in the causation of infantile diarrhœa must also be emphasised. In almost every case this infection is contracted from an adult. Those responsible for the care and management of infants must be made fully aware of this great danger and of the steps that can be taken to prevent it, both in the home and in the hospitals In this connexion I wish to draw attention to the new babies' block of the Birmingham Children's Hospital now nearing completion Therein each infant will be isolated in a small cubicle, and the nursing and other arrangements have been designed to prevent all extraneous infection or cross-infection among the babies in the hospital.

Summary and Conclusions

The syndrome known under the names of infantile gastro-enteritis, acute diarrhœa and vomiting, and acute intoxication is a frequent and serious disorder of infancy and early childhood. An analysis of 500 cases treated in the Children's Hospital, Birmingham, during the last few years reveals that it is essentially a disease of the early months of life, and that its incidence falls most heavily on artificially fed babies Nowadays infantile diarrhœa has no particular seasonal incidence but is present both in the summer and in the winter months Innumerable classifications have been advanced, but none is entirely satisfactory. At the present time much attention is being focused on the importance of infection in parts of the body other than the alimentary tract Of the cases here considered 46 2 per cent had evident parenteral infection at the time of admission, and the mortality-rate was 56·3 per cent. No parenteral infection was present at any time in 30 3 per cent, and the mortality-rate of this group was 11·3 per cent. A further group of 23·6 per cent. developed parenteral infection after admission to hospital, and the mortality-rate was 78 8 per cent The relationship between infantile diarrhœa and parenteral infection has not yet been elucidated; it is suggested that sometimes this infection is the cause, but sometimes it is the consequence

In the treatment of infantile diarrhœa the correction of the dehydration is the most important measure, and for this purpose fluid may be given by mouth, by subcutaneous injection, and by intravenous injection. Blood examination of these babies commonly reveals a hæmoconcentration, and therefore blood-transfusions are contra-indicated unless a true anæmia is proved. It is difficult to assess the amount of sodium chloride required, but it is probable that in the past excessive amounts have been administered After an initial starvation of twelve to twenty-four hours, feeding should be begun, at first with feeds low in fat but with a full protein and liberal and mixed carbohydrate content.

Finally, for the prevention of infantile diarrhœa, breast-feeding, protection against parenteral infection, and early and prompt treatment are precautions of immense value

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(*Continued at foot of opposite page*)

HÆMORRHAGE IN JAUNDICE

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THE danger of hæmorrhage in jaundice has long been recognised. It is greatest in the few days after operation, though it may occur in unoperated cases During the operation no abnormal bleeding is noticed and hæmostasis is generally secured without difficulty, the bleeding takes place a few days later, and the period of greatest danger lies between the third and the sixth days The hæmorrhage usually takes the form of a slow ooze into the depths of the wound, forming a hæmatoma, or perhaps leaking on to the dressing Less often there is bleeding from the gums, nose, or intestinal mucosa

The frequency of postoperative hæmorrhage in jaundice has been variously estimated Walters (1921) has stated that fully half the deaths after operation in jaundiced subjects are due to hæmorrhage, but most surgeons would probably give a much lower estimate *Table I, compiled from four papers by* American and Continental writers, shows that in nearly 4000 operations on jaundiced subjects 61 of the 442 postoperative deaths (13 8 per cent) were attributed to hæmorrhage, and this figure tallies very closely with the 12 per cent given by Sir John Fraser (1938)

TABLE I—POSTOPERATIVE DEATHS IN JAUNDICE

Author	Operations on jaundiced subjects	Total deaths	Deaths from hæmorrhage
Petrén (1918)	1801	231	30
Tennesen (1934)	649	80	4
Judd and Marshall (1931)	1181	108	19
Ravdin et al (1938)	155	23	8
Total	3776	442	61

CAUSE OF HÆMORRHAGIC TENDENCY

My observations lead me to believe that one or more of the following factors may be concerned in the hæmorrhagic tendency —

(1) Delayed coagulation of the blood
(2) The formation of a soft friable bulky clot, which does not retract well
(3) Fragility of the capillary blood-vessels, similar to that seen in scurvy, but not amenable to treatment by vitamin C or P

Of these three factors by far the most constant is the impaired coagulability of the blood. Often this is reflected in the coagulation time, which, when estimated by the ordinary clinical methods, may be lengthened to 10, 15, or even 20 min In other cases, even though the coagulation time appears normal, the prothrombin test described below will reveal a potential impairment of clotting

The cause of the faulty coagulation in jaundice has been much discussed It has been widely attributed to a deficiency of calcium, which is "fixed" by bile pigments and thus rendered unavailable for coagulation, but so far there has been no real evidence that lack of calcium is responsible Moreover, administration of calcium has never been shown conclusively to reduce the clotting time, though it is still used for this purpose in many surgical clinics Recent work, initiated by Quick and his colleagues (1935) in Milwaukee, makes it clear that the essential factor is a deficiency of the prothrombin content of the blood. It appears that normal blood contains an excess of prothrombin and there may thus be a considerable deficiency without much effect on the coagulation time as estimated by the ordinary methods, but when the prothrombin level falls below a critical level the hæmorrhagic tendency quickly becomes manifest This explains the common experience that a jaundiced patient whose pre operative blood coagulation time is normal may develop hæmorrhages a few days later, when operation has reduced the prothrombin level to a dangerously low level

FACTORS CONCERNED IN PROTHROMBIN DEFICIENCY

In seeking the cause of the prothrombin deficiency in jaundice we must bear in mind that a similar prothrombin deficiency has also been shown to be responsible for the hæmorrhagic tendency observed in certain cases of external biliary fistula, in which the whole bile secretion is lost for a long period Fig 1 illustrates such a case, the history being as follows —

A woman, aged 70, referred to me with a short history of progressive painless jaundice, proved to have a carcinoma of the pancreas In view of her critical condition, I performed a simple cholecysto stomy, thus draining the bile externally The jaundice gradually faded, and fifteen weeks later a cholecyst gastrostomy was performed, to direct the bile once again into the alimentary tract As fig 1 shows, while the external fistula was maintained the prothrombin index was persistently low (about 40 per cent of the normal), but within a week after directing the bile into the stomach the prothrombin index had risen to the normal level

Thus a prothrombin deficiency is found in two distinct conditions jaundice and biliary fistula Now it is clear that one important feature which these two conditions have in common is that no bile reaches the alimentary tract. in one case it is dammed back in the bile passages, and in the other it escapes externally, and thus its digestive value is lost This suggests that the prothrombin deficiency may be due to faulty absorption of some substance from the intestinal tract owing to the lack of bile

It is known from the earlier work of Dam (1935), in Copenhagen, that a hæmorrhagic diathesis *which occurs in young chickens and is* associated with a diminished prothrombin content *is due to a deficiency of the Koagulation vitamin* or vitamin K From this work it was an easy step to assume that a similar deficiency of vitamin operated in jaundice—not in this case because of deprivation from the diet but because of faulty absorption in the absence of bile Butt, Snell, and Osterberg (1938) and other workers in America have accepted this view, and the cases I report below appear to give some support for it It

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seems likely that besides the difficulty in absorbing the vitamin another factor is concerned—the factor of liver damage. It is not yet understood fully what part the vitamin plays in the synthesis of prothrombin, but there is some evidence to suggest that this process takes place in the liver. In jaundice, in which the liver is so obviously damaged, it seems possible that there is not only impaired absorption of the vitamin from the alimentary tract but also impaired synthesis or storage of prothrombin in the liver. This would account for the fact already referred to, that the prothrombin deficiency appears to run parallel with the liver damage. Much work has been done in recent months, especially in America, to determine the distribution and chemical nature of the vitamin. It appears to be widely distributed in various foodstuffs and has been obtained in greatest amount from alfalfa grass. It is fat-soluble, and the work of Klose and his colleagues (1938) suggests that it is a complex unsaturated hydrocarbon.

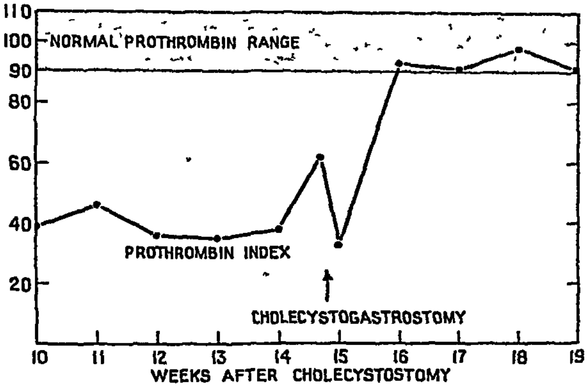

FIG. 1—Chart of prothrombin index in complete external biliary fistula after cholecystostomy for carcinoma of pancreas, showing return to normal range after cholecyst-gastrostomy.

In the work reported here I have attempted to answer three questions :—

(1) Is there a prothrombin deficiency in jaundice, and if so does it bear any relation to the depth or duration or type of the jaundice, to the amount of liver damage, or to any other feature ?

(2) Is such a prothrombin deficiency to be regarded as a trustworthy criterion of the hæmorrhagic tendency ?

(3) Can the hæmorrhagic tendency be prevented or cured by the administration of vitamin K ?

PROTHROMBIN ESTIMATIONS IN *JAUNDICE*

I have used the prothrombin test described by Quick *et al.* (1935). Briefly, this is a form of blood-coagulation test, so modified as to act as a test of the prothrombin content of the blood. According to the generally accepted theory of blood coagulation, prothrombin, which is a normal constituent of the plasma, is activated by thrombokinase or tissue extract in the presence of calcium to form thrombin, which then converts soluble fibrinogen into insoluble fibrin or clot. The aim of Quick's method of estimating prothrombin is to supply an optimal amount of all the substances required for coagulation except prothrombin ; the coagulation-time of the resultant mixture will then be inversely proportional to the amount of prothrombin present. The technique is not difficult. Blood from a vein is oxalated to permit transfer to the laboratory. It is then recalcified by adding an excess of calcium chloride, and an excess of thrombokinase is supplied in the form of an extract of brain. We already know that fibrinogen is present in adequate amount—and I have confirmed it in all the cases in this series—hence the only variable is prothrombin. Under these conditions normal blood clots very rapidly—in 20–40 sec, varying with the sample of brain—whereas blood deficient in prothrombin may take three or four times as long to clot The prothrombin index is then estimated as a percentage of the normal Thus, if normal blood takes 30 sec to clot and jaundiced blood takes 60 sec, the prothrombin index is 50 per cent. This figure is to be regarded merely as an index, not as an accurate quantitative measure of the prothrombin present.

The venous blood is obtained by syringe, and 4·5 c.cm. is added immediately to 0 5 c cm. of a M/10 solution of sodium oxalate in water. The oxalated blood can be stored for two or three days (not longer) in a refrigerator.

The preparation of thrombokinase is made from brain tissue, obtained conveniently from the autopsy room. After removal of the meninges and vessels, the brain is thoroughly washed to remove all blood and is pulped and ground into a uniform paste. It is then spread in a thin layer over sheets of glass and dried by a hot electric blower. The dried brain is scraped off and stored in a well-stoppered bottle. Its thrombokinase activity does not appear to deteriorate with keeping. Immediately before use, 2 g. of the dried brain is emulsified in 10 c.cm. of physiological saline solution and incubated for 15 min. at 37° C, after which it is filtered through gauze to remove coarse fragments.

The calcium solution consists of M/40 calcium chloride in distilled water. It should be made up in bulk and stored for a few days before use.

For the estimation, 0 1 c.cm. of blood plasma and 0·1 c cm. of the brain emulsion are pipetted into a clean dry test-tube, and 0·1 c cm of calcium chloride solution is then added, and the tube is immediately immersed in a water bath at 37° C., where it is shaken vigorously for a few moments and then rocked gently until the mixture coagulates. The time in seconds (measured by stop-watch) from the moment of adding the calcium to the moment of coagulation constitutes the prothrombin-time, and by comparing this with the clotting-time of a control plasma (which should preferably be estimated at each sitting) the prothrombin index may be obtained.

Unlike the ordinary blood-coagulation test, this estimation is highly satisfactory. It is simple to carry out, the end-point is exact, and the figures obtained in consecutive estimations are remarkably constant. Thus in my last 54 control observations on normal bloods, using thrombokinase solution from a single batch of dried brain, the prothrombin-time was invariably between 25 and 35 sec and in the great majority between 28 and 32 sec. Compared with this normal range, the figures obtained in jaundiced patients commonly exceed 75 or even 100 sec

I have now carried out prothrombin estimations in twenty cases of jaundice, with about 200 observations on normal bloods as controls (table II) In eight of the cases the jaundice was toxic, varying from mild catarrhal jaundice to fulminating, and in one case fatal, toxæmia. Table II shows that six of the eight cases presented a prothrombin deficiency, of slight degree in the majority, but severe in a few, and in one case, the fatal toxic one, with as low an index as 24 per cent. In the remaining twelve cases the jaundice was due to some form of malignant obstruction—carcinoma of the pancreas in the majority—and in this series all except one showed a prothrombin deficiency, which in the majority was of severe degree. The prothrombin deficiency was considerably more severe in obstructive jaundice than in toxic jaundice Table II shows that in general the prothrombin deficiency tends to be most evident in long standing deep jaundice (cases 17, 18, and 19) There are, however, exceptions to this general rule, and some times a surprisingly low prothrombin index is obtained in a case of short duration or in one with comparatively slight icterus, whereas the converse holds true that the prothrombin index may remain normal even in the presence of severe icterus of several weeks' duration Thus case 20, a man aged 55, suffering from carcinoma of the pancreas, whose jaundice had appeared only four weeks previously and was of only moderate depth, presented the remarkably low prothrombin index of 18 per cent , whereas case 9, a man of 59, suffering from the same disease and clinically very similar but with deeper jaundice, presented a normal prothrombin figure These discrepancies may perhaps depend on differences in the amount of liver damage Liver function tests are notoriously unreliable, and I have not carried them out as a routine, but the clinical evidence in my series of cases suggests that liver damage is one of the factors concerned in reducing the prothrombin content of the blood

TABLE II—PROTHROMBIN INDEX IN JAUNDICE

Case	Prothrombin index (per cent)	Duration of jaundice (weeks)	Depth of jaundice (icteric index)
TOXIC JAUNDICE			
1	107	2	32
2	98	3	140
3	91	2	45
4	76	2	70
5	74	6	64
6	63	6	104
7	55	4	50
8	24	1	95
MALIGNANT OBSTRUCTIVE JAUNDICE			
9	100	4	125
10	83	2	120
11	83	2	65
12	80	3	50
13	71	2	76
14	70	3	125
15	58	6	130
16	54	12	75
17	52	7	140
18	46	6	82
19	23	11	175
20	18	4	65

PROTHROMBIN ESTIMATIONS AS A CRITERION OF HÆMORRHAGIC TENDENCY

It is well known that the tests for blood coagulability in clinical use are of very limited value in estimating the risk of postoperative hæmorrhage in jaundice Not only does the blood coagulation time, as judged by such tests, vary between wide limits in normal subjects, and even in the same subject at successive estimations, but also it is a common experience that in jaundice a postoperative hæmorrhagic tendency may develop in a patient whose coagulation time is well within the limits of the normal I have had four such cases—patients with preoperative coagulation times of 2½–5 min , who subsequently developed serious hæmorrhages Nor can the various modifications of the tests for bleeding-time and coagulation-time—e g , those suggested by Lee and Vincent (1916) and Ivy and others (1935)—be judged more satisfactory

It is difficult to dogmatise on the brief experience of twenty cases, but my impression is that in the prothrombin test we have a method which may well prove to be a trustworthy criterion of the hæmorrhagic tendency Only three of the twenty cases in my series have had hæmorrhages, and in one of these the hæmorrhage was trivial. It is significant, however, that all three cases had a considerable deficiency of prothrombin (the preoperative figures were 58, 23, and 18 per cent), whereas in cases in which the deficiency was less no hæmorrhagic tendency developed The two cases already referred to (cases 9 and 20 in table II) illustrate well the value of the prothrombin test in assessing the risk of hæmorrhage

CASE 9 was a man aged 59, suffering from jaundice due to carcinoma of the pancreas On admission his prothrombin index was 100 per cent , while he was under observation it never sank below 75 per cent I therefore felt confident in recommending operation and in performing a cholecyst-gastrostomy After the operation he showed no tendency towards hæmorrhage and made an uninterrupted recovery

CASE 20 was a man aged 55, who also suffered from carcinoma of the pancreas, but in his case the prothrombin index on admission stood at the very low figure of 18 per cent It was clear that, if we had embarked on an immediate operation, there was a strong probability that he would develop postoperative hæmorrhages, and, even in spite of preliminary treatment which had the effect of raising his prothrombin index to 50 per cent , he did, in fact, present a somewhat trivial hæmorrhage from the wound on the second day after operation This patient's further history is given later in this paper, when it will be seen that he subsequently came to operation again, and again developed postoperative hæmorrhage from the wound, the prothrombin index at that time being 32 per cent

Thus it appears likely that the prothrombin estimation will prove a valuable method of assessing the hæmorrhagic tendency

PREVENTION OF HÆMORRHAGE BY ADMINISTRATION OF VITAMIN K

In four of the cases in my series I have made observations on the effect of administering vitamin K. The preparation used has been Corophyl, prepared by the American Dairy Company and supplied to me through Messrs Glaxo This preparation contains vitamins A, B, and C, and doubtless other factors; hence some caution is necessary in interpreting the beneficial results obtained as due to vitamin K * It has not yet been possible to produce this vitamin in purified form in sufficient quantity for clinical work Owing to the difficulty in obtaining a sufficient supply of the corophyl, I have been able to treat only a small number of cases in this way, but this has to some extent been counterbalanced by the fact that each case has been the subject of a close study, with observations on the bleeding time, the coagulation time, and many biochemical estimations For the purpose of this paper, it is not necessary to report all the observations in detail, and I propose merely *to give* such summaries as indicate the extent to which the administration of vitamin K has been of value It may be stated first that the results of this treatment, although somewhat variable, have on the whole been satisfactory in three cases but completely ineffective in the fourth, a case of external biliary fistula. The following are the details of the three cases in which the vitamin proved effective

CASE 15 —This is the first case in which the vitamin was given, and in a sense, it was experimental , but, although the issue was fatal, some benefit appeared to be derived from the vitamin. The patient was a woman aged 50, who was admitted to hospital deeply jaundiced. She had previously had one breast removed for carcinoma, and the jaundice was due to the pressure of a solitary metastasis on the common bile-duct. On admission to hospital she had a prothrombin index of 58 per cent. (fig. 2). Cerophyl was not available then, so she was given 5 oz of bile daily by stomach-tube in the hope that it might promote the absorption of sufficient vitamin from the ordinary diet to influence the prothrombin content.

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* Isolated observations made since this paper was written lead me to suspect that the results described may be due to some substance present in the crude extract other than vitamin K

This treatment, however, proved insufficient, perhaps because in conditions of liver damage a great excess of vitamin is required. At this stage a supply of cerophyl was obtained and was given over a period of sixteen days. This raised the prothrombin index almost to the normal range, in spite of the fact that the jaundice was becoming deeper and the patient's general condition increasingly grave. At this stage it was decided to perform a laparotomy; the malignant mass was detected, and the gall-bladder was drained externally. However, the patient did not improve after the operation. There was evident impairment of liver function, and she died a week later. No bleeding was noted until the third day after operation, but from then until death there was oozing from the wound, which persisted more or less continuously in spite of a small transfusion.

It is noteworthy that in this case the prothrombin level was not maintained after operation but sank rapidly, and at the time of the postoperative bleeding it was below 50 per cent. I have observed this feature in several cases, and it appears that this is the reason for the peculiar liability to hæmorrhage in the immediate postoperative period. Two lessons are to be learnt from this case. The first is that administration of the vitamin should be continued after operation, especially if there is much liver damage, for only in this way can the prothrombin index be maintained over the dangerous postoperative phase. The second lesson is that an external biliary fistula should be avoided whenever possible, for the loss of bile tends to increase the prothrombin deficiency.

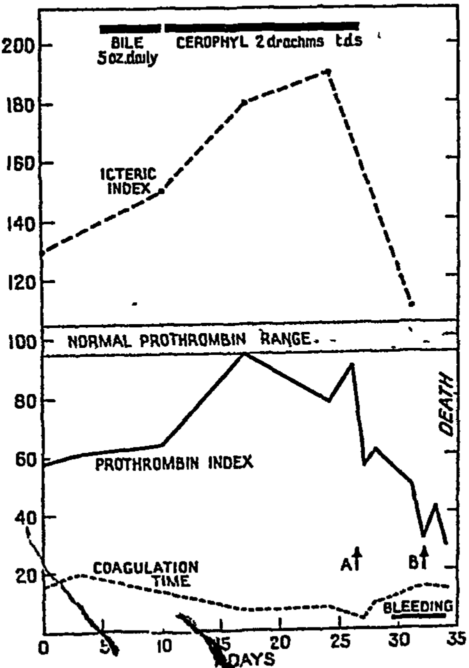

FIG 2—Chart of [illegible]othrombin index in fatal jaundice due [illegible] malignant mass in pancreas secondary [illegible] breast carcinoma (case 15) A, cholecys[illegible]tomy; B, transfusion

CASE 20—In this case the administration of vitamin was more effective. This was the man aged 55 previously referred to. He was admitted with moderate jaundice, the result of a carcinoma of the pancreas.

On admission his prothrombin index was 18 per cent. (fig. 3)—the lowest figure in this series. The vitamin was given over a period of eleven days, and, although its effect was not dramatic, there was a steady rise in the prothrombin index up to 50 per cent Operation was thought advisable at this stage, and a cholecyst-gastrostomy was performed. After operation there was again a transitory fall in the prothrombin index to 32 per cent, and at this point, on the second day, there was some bleeding from the wound. Later, however, the prothrombin index rose rapidly and within a week of operation attained the normal level.

The further progress of this case is of special interest. A fortnight after operation the prothrombin index had again fallen—to 44 per cent—and at this stage it was also becoming obvious that the jaundice showed no appreciable improvement. The patient was kept under observation for a further period of ten days, when these findings were confirmed It was decided that probably the cholecyst-gastrostomy had been ineffective in relieving the jaundice owing to encroachment of the growth up the common duct and involvement of the termination of the cystic duct. The patient was therefore advised to undergo a second exploration Before proceeding with the operation a further period of treatment with cerophyl was given. In this instance a preparation of bile-salts (Bilron) was also given, to promote the absorption of the vitamin. Fig. 3 shows that the effect was a rapid increase in the prothrombin content, which attained 90 per cent. by the end of one week and maintained this level for a further period of a week.

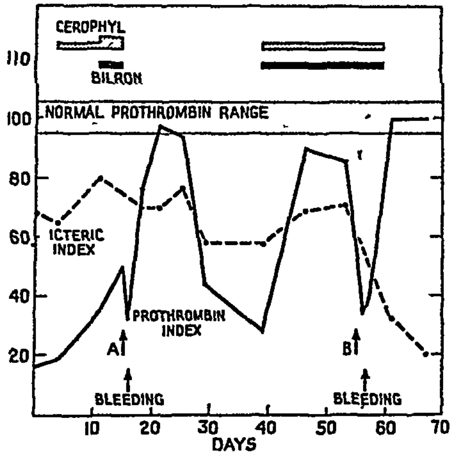

FIG. 3—Chart of prothrombin index in jaundice due to carcinoma of pancreas (case 20). A, cholecyst-gastrostomy; B, cholangiogastrostomy.

The second operation was now carried out and the provisional diagnosis confirmed. Accordingly the common duct above the growth, which was much dilated, was anastomosed to the stomach. This proved effective in relieving the jaundice, which rapidly faded The prothrombin index again diminished after operation, falling to 32 per cent, and at this stage again on the second postoperative day there was a free hæmorrhage from the wound, necessitating packing with adrenaline gauze. Later, however, the prothrombin index rose again, and within a week of operation it attained a normal figure, where it remained during the patient's subsequent stay in hospital.

CASE 18 was a man aged 60, who had suffered from jaundice, painless in origin and progressive, of seven weeks' duration. He was admitted to the Royal Infirmary, Edinburgh, under the care of Dr. W. A.

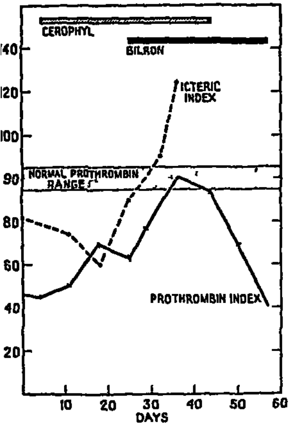

Fig 4—Chart of prothrombin index in obstructive jaundice thought to be due to carcinoma of pancreas (case 18)

Alexander, to whom I am indebted for permission to carry out the investigation The case is believed to be one of carcinoma of the head of the pancreas, but no operation was performed, and the patient left hospital before the diagnosis could be confirmed

On his admission to hospital the prothrombin index stood at 46 per cent (fig 4) Cerophyl was administered, and slight improvement in the prothrombin content was obtained, the index being raised in *a fortnight* to 70 per cent At this point the bile salt preparation (bilron) was added to promote absorption of the vitamin, and within ten *days* the prothrombin index was raised to the normal level and was *maintained at this level for a further* period of one week. At this stage, when it was decided not to advise operation, the cerophyl was discontinued, the administration of bilron, however, being maintained The result was a rapid fall in the prothrombin, which at the end of fourteen days had regained its original level of just over 40 per cent

From this case, it seems clear that the improvement in the prothrombin index was attributable to the vitamin preparation

SUMMARY

(1) Hæmorrhage is a not uncommon and often fatal complication after operations on jaundiced persons

(2) The hæmorrhagic tendency is attributable to a prothrombin deficiency, which is most noticeable during the few days after operation

(3) The prothrombin deficiency appears to be associated with faulty absorption of a vitamin owing to the absence of bile from the alimentary tract There is evidence to suggest that another factor is the faulty utilisation of the vitamin as a result of liver damage

(4) Estimation of the prothrombin content of the blood appears to be a useful method of assessing the risk of hæmorrhage To ensure reliable results the test should be carried out not only before operation but also afterwards, *and* any sudden *fall* in the prothrombin index at this time should be regarded as a danger-signal

(5) The risk of hæmorrhage in jaundice may be reduced by the administration of preparations containing vitamin K This should be done for a sufficient period before operation to remedy the prothrombin deficiency, and the administration should be continued later until the dangerous postoperative period is past

(References at foot of next column)

SODIUM AND CHLORINE RETENTION WITHOUT RENAL DISEASE

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During the last few years several patients not suffering from renal disease have been observed in whom a very high level of sodium and chloride was found in the blood, with nearly complete absence of these elements from the urine The data are in many ways incomplete but seem of sufficient interest to publish The chemical findings in each case are given in the table

CASE HISTORIES

Case 1 —Caretaker, aged 38 Admitted to hospital following hæmatemesis He had been taking an alkaline powder for indigestion He was dehydrated and drowsy, and died in spite of transfusion and intravenous administration of 1 litre of distilled water as soon as the results of the blood analysis were known (von Farkas 1934) *Post mortem* Cirrhosis of the liver, with œsophageal varices The kidneys were normal on naked-eye examination, histologically there was a very occasional fibrosed glomerulus, but the great majority of glomeruli were healthy, there was definite degeneration in the tubules, particularly of the distal segments

Case 2 —Housewife, aged 60 Admitted suffering from headache, vomiting and paraplegia She was drowsy, with spastic paralysis of both legs and left arm Blood pressure 155/75 *Post mortem* A large cerebral hæmorrhage between the frontal lobes from a ruptured aneurysm of the left anterior cerebral artery. *Marked atheroma Hypertrophy of* the heart Kidneys showed very slight ischæmic fibrosis, the majority of the glomeruli appeared healthy but there was some tubular degeneration

Case 3 —Radio-dealer, aged 55 Vague history of illness for one week, with development of left hemiparesis, had been taking an alkaline powder for indigestion Blood pressure 130/70 No hæmatemesis, but passed large melæna stool after admission *Post mortem* Recent softening of right internal capsule Ulcer in first part of duodenum Kidneys showed a slightly granular surface when capsule was stripped, sections showed occasional fibrosed glomeruli with some tubular degeneration

Case 4 —Child, aged 4 months Sent in as a case of postvaccinal encephalitis Very drowsy, bulging fontanelle, would not feed, dehydrated *Post mortem* Adenoma of choroid plexus infiltrating right posterior lobe beneath the lateral ventricle Kidneys completely normal

Case 5 —Child, aged 2¼ years Admitted with complete suppression of urine, and died without

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CHEMICAL FINDINGS

—	*Normal*	CASE 1					CASE 2				CASE 3					CASE 4			
		Serum		Urine		Clearance	Serum		Urine		Serum		Urine		Clearance	C S F.		Urine	
Na	*140*	384	*167 0*	15 5	*6 7*	..	349	*153 0*	6	*2 5*	374	*162 5*	12	*5 0*	..	382	*166*	21	*9*
K	*5*	12 5	*3 2*	282	*72 0*	6 2	13 5	*3·5*	264	*68 0*	16 9	*4 3*	104	*26 5*	5 8	.	..	436	*111*
Ca	*5*	8·4	*4 2*	—	—	..	10 7	*5·3*	6	*3 1*	13 6	*6 8*	6·0	*3 5*	..	..	..	..	..
Mg	*2*	5 6	*4 7*	2 5	*2 0*	..	3 5	*2·9*	—	—	3 7	*3 0*	5 5	*4 6*	.	..	..	..	..
T.F.B.	*152*	..	*179*	..	*81*		..	*165*	.	*74*	..	*177*	..	*40*	.	..	.	.	..
Cl	*100*	492	*138 8*	2 1	*0 6*	..	425	*119 6*	21	*5 9*	381	*107 5*	0	*0*	..	533	*150*	trace	..
P	*2*	4 8	*2·8*	51	*16 0*	2 9	3 1	*1·8*	91	*29 4*	2 8	*1 8*	31	*10 0*	10 4	..	..	..	..
HCO_3	*27*	45 0	*20 2*	..	.	..	49 1	*22 2*	..	.	88 5	*39·8*	.	..	..	..	..	..	..
S	..	..	..	192	*120 0*	36*	..	.	198	*124 0*	3 4	*2 1*	111	*71 0*	35	..	..	237	*148*
T P.	*16*	5 9	*13 2*	trace	..	..	5 9	*13·9*	..	..	6 6	*16 3*	..	..	..	..	..	..	..
T.A.	*145*	..	*173*	..	*137*	..	.	*158*	..	*159*	..	*168*	..	*81*	.	..	..	.	..
Urea		220	.	2100		5 5	105	..	4000	.	345	..	2750	..	7 7	68	..	.	..
pH	..	..	..	5 5	..	..	.	..	acid	..		..	5 4	..	..	..	..	..	..
Output c.cm. per min	..	..	.	0 28	.	..	..	..		..		..	0 9	..	.	.	..	..	..

T F B = Total fixed base (sum of all determined bases)
T.A = Total determined acids
T P = Total protein (g per 100 c cm)

Figures in roman type represent values in mg per 100 c cm except protein, which is given as g per 100 c cm and bicarbonate which is given as vols per 100 c cm

Figures in italics represent values in m Eq per litre: in the case of phosphate the basicity of phosphoric acid has been calculated as 1 8 at the pH of serum, and as 1 0 in the strongly acid urines; in the case of protein the figure is calculated as the sum of the separate values (not recorded here) of albumin and globulin

"Clearances" are calculated directly as c cm blood cleared per minute. In the case of urea only the square-root formula has been employed

* Assuming serum-sulphur as 1 5 mg per 100 c cm

re-establishment of urine flow. This case is included because, although there were no chemical observations except a high and rising blood-urea, it may possibly represent an extreme example of the same condition. *Post-mortem* showed extensive tuberose sclerosis of the brain. Kidneys completely normal.

The principal findings in all cases were high sodium and chlorine in the serum, with a high blood-urea. The urines all showed very low sodium and chlorine, with high concentrations of potassium, phosphate, sulphate and urea; all were strongly acid, even in case 3 where the patient was suffering from alkalosis. Except in this last case there was no evidence of disturbance of the usual acid-base relationships in the serum The fairly close agreement between the values for total fixed base and total determined acids shows that there is no accumulation of "undetermined acids" such as occurs in uræmia due to chronic nephritis The differences in the three cases reported here were 6, 7 and 9 m Eq. per litre; in uræmia values of 20 m Eq. per litre and upwards are usually met with. The kidneys in general showed normal glomeruli, apart from very slight focal ischæmic fibrosis, but some showed tubular degeneration.

DISCUSSION

The mechanism by [illegible]ch this condition originates is not clear. All the [illegible]ents, it is true, showed to some extent the clinica[illegible]mptoms of dehydration, but most patients with de[illegible]dration do not show this accumulation of sodium a[illegible] chlorine in the blood All the patients, except o[illegible] whose brain was not examined post mortem, had [illegible] lesion in the central nervous system; the lesions were very varied in nature and distribution and it [illegible]s difficult to find any factor common to them all. Starling and Verney (1924) h[illegible] shown that the e[illegible]xcretion of chloride and [illegible]largely under the co[illegible]ntrol of a pituitary hormone, and in the absence of this hormone there occurs a diuresis with a very low concentration of salt even with high chloride in the plasma; by the administration of this hormone the concentration and absolute amount of chloride excreted rises very much. It seemed possible that the varied intracranial lesions might in some way act through interference with the secretion of this hormone The recent observations of Ebbs (1937) that there is often a very high cerebrospinal-fluid chloride level† in cases of spontaneous cerebral venous sinus thrombosis in children would fit in with the hypothesis that some lesion of the central nervous system may be indirectly responsible for the condition Ebbs stresses the fact that there was no evidence of dehydration of his patients at the time of onset.

It is well known that abnormalities in the urinary secretion may arise after intracranial accidents—e g, the albuminuria after subarachnoid hæmorrhage—and a number of patients with cerebral hæmorrhage and other intracranial accidents have therefore been investigated, but the retention of sodium and chloride has not been found to be a general phenomenon in these conditions.

Another hormone which is known to influence the excretion of sodium, potassium and chloride is that of the suprarenal cortex, the metabolic changes in patients described resembling what might be envisaged as a result of excessive cortical activity. However, this explanation seems unlikely on quantitative grounds, for even very massive doses of cortical extract have effects which are slight compared with the nearly complete absence of sodium and chloride from the urine (Harrop and Thorn 1937)

Borst (1938) has described a similar retention of chloride and sodium with high levels in the blood in some cases of massive gastro intestinal hæmorrhage, and ascribes the result to imperfect filling of the cardiovascular system Actually dehydration in the ordinary sense was not always present, for some of the patients had œdema and quite large urinary outputs at the time of maximum retention His patients at the time when the sodium and chloride excretions were lowest had normal blood pressures, and if his explanation is correct it seems possible that this dehydration acts on the kidney indirectly through nervous or hormonal influence

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† High cerebrospinal-fluid chloride is always associated with high serum-chloride

An alternative explanation arises from the demonstration by Shannon and Fisher (1938) that the tubules are capable of reabsorbing a given maximum quantity of glucose from the glomerular filtrate in a given time whatever the level of the blood sugar McCance and Lawrence (1935) and others have shown that in some cases of diabetic coma with very high blood sugar values there may be no or a negligible glycosuria this usually occurs in patients with very low urine output, and in view of Shannon and Fisher's work, the explanation may be that the glomerular filtration rate is so low that the tubules are capable of reabsorbing all the sugar in the glomerular filtrate even when the blood sugar is high This explanation has been put forward as a possibility by McCance and Widdowson (1939)

About the excretion of potassium very little is known, but even if it is admitted that some of the phosphate, sulphate, and urea is excreted by the tubules, which is by no means definitely proved, the excessive reabsorption of sodium and chlorine with high serum sodium and chlorine levels remains to be explained There is at present no evidence as to whether a mechanism similar to that shown by Shannon and Fisher to regulate the excretion of glucose operates in the case of any electrolytes If such a mechanism does operate it might be possible, by assuming a low glomerular filtration rate, which seems likely from the low urea clearances, to account for the disappearance of the sodium and chlorine, but even so it is still not obvious why the other electrolytes—potassium, phosphate, and sulphate—are excreted in such high concentration

Case 3 is of particular interest, for in spite of the alkalosis this patient had a strongly acid urine McCance and Widdowson (1936) have suggested that the acid urine found in some cases of alkalosis is due to a deficiency of fixed base available for excretion, this explanation does not cover a case such as this, in which there is gross excess of base in the serum, but little in the urine Maizels and McArthur (1930) have also reported a series of cases of diarrhœa and vomiting with dehydration in infants, in which the urine was acid and contained little chloride in spite of a high bicarbonate and chloride concentration in the plasma

The explanation seems to be either that the tubules handle chloride and sodium in a similar manner to glucose, and reabsorb up to a certain maximum quantity per unit time, whatever the level in the blood, or that there is some abnormality in the nervous or hormonal influences acting on the kidneys It is hoped in any future case to obtain further information as to the mechanism by means of the inulin clearance as a measure of glomerular filtration rate, and organic iodine clearance as a measure of the renal blood flow

SUMMARY

A number of patients have been observed in whom there was nearly complete absence of sodium and chloride from the urine, with very high levels in the blood Other electrolytes were dealt with normally. There was no evidence of renal disease sufficient to account for the condition, but all cases where the brain was examined post mortem showed some lesion of the central nervous system It is suggested either that the tubules reabsorb sodium and chloride independent of their concentration in the blood up to a definite maximum quantity per minute, or that there is an abnormality in the nervous or hormonal control of the kidneys

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TRENDELENBURG'S OPERATION FOR PULMONARY EMBOLISM

A SUCCESSFUL CASE

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It is now just over thirty years since Prof Friedrich Trendelenburg, already a veteran surgeon of 64, embarked on his endeavours to evolve an operation for pulmonary embolism After much work on the cadaver, followed by animal experiments, he wrote —

> "*The operation in the calf, on account of the form* of the thorax, the situation of the pulmonary artery, and the intercommunication of the pleuræ, presents much greater difficulty than in man It is therefore greatly to be hoped that, sooner or later, a successful case in the human will follow this successful operation in an animal "

That was in 1908 In his animal experiments at Leipzig, Trendelenburg used long sterile strips of lung tissue, which were introduced into the internal jugular veins of calves Carried by the blood-stream to the heart, the strip then blocked the pulmonary artery Eventually he was able to operate successfully for this experimental embolism and he and his team of assistants determined to "try their hand at raising the dead"—those patients struck down suddenly and unexpectedly when recovering from an operation, a fracture, or childbirth Continental surgeons received this daring proposal with surprise and doubt

Trendelenburg's first case died in the operating theatre The second however, operated on by Sievers, his assistant lived 15 hours and died of "heart failure" The third, operated on by Trendelenburg himself lived for 37 hours, dying tragically of hæmorrhage from the internal mammary artery

Within the next year or so a number of European surgeons, with more keenness than sense according to some of their elders, tackled these forlorn hope cases Among them must be mentioned Schumacher, Sauerbruch, and Krüger, a pupil of Trendelenburg * Krüger's case (1909) gave hope that at last a human patient might indeed be saved, *for the patient lived* 5¼ days, dying of infection of the left pleura. It is not surprising that these repeated disappointments led to the undertaking coming to be looked upon as hopelessly difficult and formidable—not a practical proposition, as Finney dismissed it

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* Only a minimum number of references are quoted in this article they have already been given fairly fully e g in Sauerbruch's 'Chirurgie der Brustorgane' and Sauerbruch and O'Shaughnessy's 'Thoracic Surgery'

Trendelenburg lived to see Kirschner in April, 1924, show a successful case before the congress of the German Surgical Society in Berlin (Kirschner 1924), but he died at the end of the same year Kirschner, who was then professor of surgery at Königsberg, carried out the operation exactly as laid down by the master, removing the second cartilage, tying the internal mammary vessels, and opening the left pleura After this dramatic and belated vindication, surgeons were once again stimulated to undertake the operation, again to be met by a crop of disappointments However, in 1927, Meyer of the Krankenhaus Westend, Berlin, published another successful case and moreover described his very important improvements on the operation He showed how, by removing the third as well as the second cartilage and by dissecting behind the inner end of the fourth cartilage, it was possible to incise the bare area of pericardium, and then by his special two-index manœuvre, tear open the pericardium reflecting with it the pleural sinus intact. In this way the operation becomes a special variety of anterior mediastinotomy, with great advantages both immediate and late Meyer altogether had four successful cases, before his tragic death in November, 1933 It is to Meyer's work and brilliant successes that the operation owes its position today The following five surgeons have had successful cases: Kirschner of Königsberg (1), A W. Meyer of Berlin (4), Nyström of Uppsala (2), Crafoord of Stockholm (3), and Valdoni of Rome (1) It may be convenient here to give a chronological list of the previous eleven cases

Date	Case	Reference
March 18, 1924	*Kirschner's*	Kirschner 1924
Feb 9, 1927	Meyer's first	Meyer 1927
March 15, 1927	Meyer's second	Meyer 1928a
Sept 23, 1927	Crafoord's	Crafoord 1928
Feb 4, 1928	Nyström's first	Nyström 1928
Feb 10, 1928	Meyer's third	Meyer 1928b
Oct 11, 1928	Crafoord's second	Crafoord 1928
Jan 23, 1929	Nyström's second	Nyström 1930
Feb 24, 1931	Meyer's fourth	Meyer 1931
Jan 4, 1933	Crafoord's third	Crafoord 1939
Nov 27, 1935	Valdoni's	Valdoni 1936

CASE-RECORDS

A woman of 49 was admitted to the North Middlesex County Hospital on Aug. 9, 1938, with an infected prepatellar bursa (left) A routine examination of lungs, heart, and abdomen revealed no abnormality. She was a strong, tall woman, and very heavy, weighing 15 st (100 kg) on admission. She had had no illnesses except influenza and colds. She had had three children (two alive), the youngest being 19.

The inflamed bursa was fomented for two days, and on the 11th was incised under an anæsthetic. The pus contained *Staphylococcus aureus* The knee made good progress, but on the 19th the leg became tense and œdematous below the knee owing to phlebitis of the internal saphenous vein 31st: complained of pain over lower left ribs Chest moved well on respiration. Percussion note good. No adventitious sounds Sept. 2: Still complained of pain in lower part of chest Diminished air entry and occasional crepitations left lower lobe. 5th: Sputum slightly bloodstained Evidently an infarct. 8th: Still complained of pain. Pyrexia. 10th: Impaired percussion note and diminished breath-sounds, bronchial in character, left base. Still blood-stained sputum. 12th: Complained of sudden inability to get breath. Greyish-blue lips. Obviously pulmonary embolism. Had been talking normally to patient in the next bed when she suddenly sat up and said, "Staff, I can't breathe. I feel faint," and grasped her throat This was at 10 50 A.M. She complained of pain in the left chest and was blue. 11.5 A.M.: Blue and sweating a good deal. Taken down to theatre on trolley and instruments got out. (A sterile Trendelenburg tray is always kept ready.)

TRENDELENBURG'S OPERATION

Operation 11.30 A M. (assistant, Mr. Galloway, jun). Incision made at leisure under local infiltration; 2nd and 3rd costal cartilages freed and removed *Owing to laboured respiration great care had to be taken* of the pleura, which bulged dangerously between the cartilages. Triangularis sterni cleaned off back of 4th costal cartilage and margin of sternum. We then waited as patient was not yet in articulo mortis. Presently pulse completely disappeared, and respiration became reduced to irregular gasps. As soon as *patient was in articulo (12.10 P.M) pericardium* was incised and split up by Meyer's manœuvre reflecting the pleura safely with it. Heart had ceased to pulsate and only twitched irregularly. Trendelenburg's sound passed and rubber tourniquet tightened around great vessels Pulmonary artery incised for 2 cm., producing gush of blood: owing to tension of pull on rubber and escape of blood it was very difficult to find the incision with the Trendelenburg thrombus forceps. With first insertion of forceps a large one-piece clot 16 in. (40 cm.) long was pulled *out (fig. 1) Lips of incision clamped.* Heart massaged; adrenaline 1 c cm. into sinus aortæ Beat came back, at first feebly and then regularly Respiration did not, but oxygen under positive pressure administered all the time with McKesson apparatus by Dr. Patrick Nagle Lobeline into aorta. Breathing started at once, but 6 min since it had stopped The circulation had probably been absent for about 3 min. Heart became strong and regular and patient a good colour. Continuous catgut size 1 for the artery suture, round and round the forceps and then tied after removing forceps, with some more loss of blood, but this was well controlled Gauze packing left in. Skin sutures. Patient breathing well and pulse very fair on leaving theatre for oxygen tent. 2.30 P.M. Good colour. Breathing well in oxygen tent, but had several clonic fits of arms and face; evidently cerebral anoxæmia had lasted too long. Fits continued during afternoon, some lasting as long as 10 min. Eventually relapsed into uneasy sleep Had not regained consciousness.

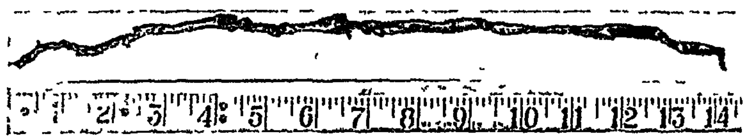

FIG 1—Clot removed from pulmonary artery (slightly shrunken), with scale of inches.

13th: In morning patient began to answer questions and ask for things Only worry was that she could not see. Continued to improve cerebrally. Pulse 116–130; volume tended to vary with alternate beats Towards evening I removed gauze packing, a good *deal of serum escaped, but no blood.* As patient was obviously anæmic 650 c.cm of citrated blood was given between 10 and 10.45 P M. Patient was very bright, and in a curious mental state of slightly fatuous repartee. She would discuss her family, her friends, the hospital staff, or her fellow patients with complete frankness and absence of reserve. No reaction from transfusion and it was decided to fix her upright in the oxygen tent for the night Breath-sounds good in both lungs, with few râles At 11 10 P M patient suddenly went blue and said she couldn't get her breath Pulse had almost disappeared Extremely anxious—very like when she had her large embolus Gradually improved in next hour, pulse became fair, answered questions, no blanching Given morphine gr ¼ which certainly eased her Colour very fair later This was evidently another clot, probably fixing her up for the night had disturbed another thrombus in the leg

14th Colour quite good Pulse 120, but volume still fair Rather restless Wound a little moist Chest radiogram and electrocardiogram taken in ward *Radiogram (fig 2) showed considerable area of* opacity at left base, no collapse of lung Electrocardiogram (fig 3) rate 125, rhythm regular, 100, P R lead I normal, lead I appears normal, in lead II voltage is low, T_2 is upright, one P wave appears to be inverted, T_3 is deeply inverted (Dr O Allan Birch) During day condition remained satisfactory In the evening was given another 400 c cm of citrated blood, with no reaction Could not see by artificial light About midnight was rather restless and respiration quicker Pulse rate up to 130

15th Brighter again but temperature 101° F and pulse quicker Left base dull and poor air entry (see fig 2) Much thin yellow fluid escaping from wound, so two lowest stitches removed, about 2 oz yellow serum with some flakes came out on coughing Re-dressed Sight quite good again, could count fingers easily Sulphanilamide 1 gramme four-hourly begun 11 30 A.M

16th Slightly "strange," and worried, called a *two-shilling piece a shilling Fluid from mediastinum* reported to contain hæmolytic streptococci, which grew freely on culture Sulphanilamide continued 1 g four-hourly Temperature 99° F, pulse 140, *respiration 36, about the same*

17th A little better Radiogram of chest showed *opacity left base much the same*, some mottling right base, breath sounds adequate, although, *rhonchi ++ and râles* Wound: frank yellow pus, draining freely, ends of wound healing Throat dry and sore with some *exudate on fauces*

18th Worried by sore tongue Streptococci now failing to grow on culture

19th Definitely better Pus yellow and mucoid, and escaping profusely Sulphanilamide reduced to 5 g a day Blood count: white cells, 25,000, red cells, 4,570,000, Hb, 84 per cent *Still spent most* of time in oxygen tent

20th Catheter passed into anterior mediastinum, dipping behind 4th costal cartilage, and connected to electric suction pump All pus now drained by this method General condition *much the same Right* lung few râles at base only Dullness and silence still at left base This was now aspirated and found to be a bloody effusion, evidently from the infarction; 400 c cm odourless fluid aspirated, no organisms found in it In oxygen tent all night and most of day

21st Draining well into pump, 225 c cm in 36 hr Skin over sacrum giving way, could not tolerate lying on side on account of difficulty in breathing

Fig 2—Radiogram of chest taken in bed *two days after operation (Sept 14, 1938)*, showing commencing effusion at left base

22nd Catheter had been draining pus from behind shelf formed by lower costal cartilages By that time she had, of course, not only suppurative mediastinitis but also suppurative pericarditis In evening, as pulse, temperature, and respiration were definitely rising, it was decided to drain pericardium Patient taken to theatre in her bed

DRAINAGE OF SUPPURATIVE PERICARDITIS

Operation at 8 P M under local infiltration with Novocain Midline over ensiform infiltrated Incision made downwards from previous one to tip of ensiform Left 6th and 7th costal cartilages carefully and slowly cleaned, and an inch of each then removed bit by bit with nibbling forceps This turned out an excellent and safe device Superior epigastric vessels tied and cut between Pad of fat pushed aside Taut pericardium eventually opened by a 2 cm vertical incision Finger was freely introduced and much fibrin could be felt Moderate amount of pus escaped but there was no loculation Draining freely Patient stood operation well

25th Wound kept dry with continuous suction, by a small catheter fixed at pericardial opening *Left hæmothorax aspirated* again in 8th space posteriorly, *till no more could be obtained—700 c cm* of bloody effusion General condition still precarious, but cerebration good, and orientation much improved. Sight recovered well, could read 1/10 in print. Still somewhat naïve but less so

Oct 2 Draining about 6 oz pus into pump daily Getting markedly deaf Sulphanilamide

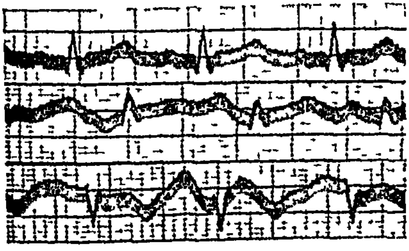

Fig 3—Electrocardiogram two days after operation (Sept 14, 1938)

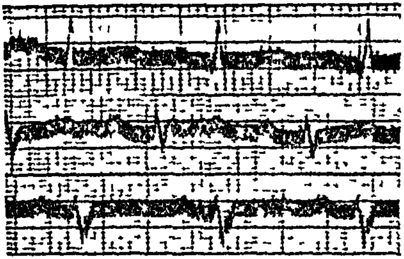

Fig 4—Electrocardiogram on Feb. 3, 1939

stopped. About a quarter of wound healed, rest wide open, showing auricles and roots of great vessels plainly, covered with granulation tissue. Also draining well from 7th cartilage pericardiotomy opening. Lungs: some rhonchi in right; left resonant and breath-sounds good. Pulse about 120 and quite strong. Temperature 99°–100° F.

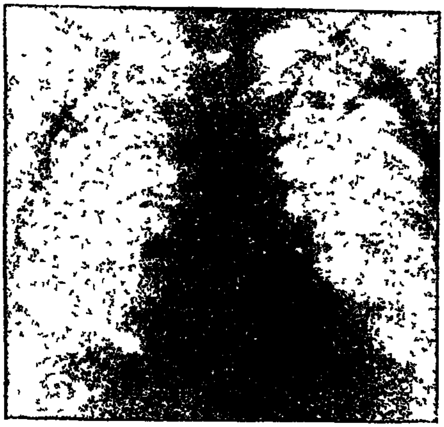

Fig. 5—Radiogram of chest on March 21, 1939, taken at 2 metres under standard conditions.

7th: Pain in left side and temperature 101°–103° F. Pleura aspirated; 20 c.cm. fluid removed, not obviously purulent. Large gangrenous area over sacrum had now sloughed.

8th: Diarrhœa for two days, improving with kaolin.

11th: Culture of fluid obtained on the 7th showed that it had now become infected, after four weeks, by hæmolytic streptococci. Infection presumably blood-borne and evidently coincided with her new pyrexia and pain in side. Fluid, at first thin pus, then bloody, aspirated from chest. General condition no change; getting thin.

12th: *Intercostal drainage of infected hæmothorax* under local infiltration by novocain in the ward. Using trocar and cannula, a No. 6 catheter was inserted in 9th space, postaxillary line. Airtight attachment to air pump with 5 cm. Hg suction

18th Somewhat anæmic again in spite of massive dosage with iron (gr. 90 daily) Blood-transfusion of 700 c cm

22nd: Intercostal drainage with pump working satisfactorily. Breath-sounds coming through well at left base. Heart wound had cleaned up wonderfully and there was now only such pus as soaked into the gauze Temperature 99°–100° F. at night. Getting up half an hour a day. Sacral sore still large but healing a little.

24th: Blood-transfusion 550 c cm. 27th: Stronger. Wound of mediastinum and granulations on back clean. Breath-sounds good.

28th: Radiogram of chest: opaque area in upper part clearing; collection in inner part of lower zone; dome could just be seen.

Rib resection for empyema under local infiltration. An inch of 9th rib in axillary line just below sinus resected. Flanged tube Flat cavity with thick yellow pus, the size of adult hand. Suction to tube for 5 days.

30th: Rise of temperature and pulse 140. Put on sulphanilamide again.

Nov. 5: Temperature normal. Empyema drained 6 oz in twenty-four hours; now thick yellow and viscid discharge. Left chest resonant down to empyema tube.

Dec. 11: Making steady and quite fast progress. Been walking around her room for a fortnight. Pericardial wound almost healed; clean granulating area ½ in. across. Empyema cavity closed. Sacral wound clean and about 2½ in. across only. Pulse regular at about 80.

15th: Worried by numbness of little and ring fingers of right hand. Cannot wring face flannel with right hand. Some weakness of muscles of the right hand supplied by ulnar nerve, with wasting. No demonstrable loss of sensation No evidence of pyramidal lesion Pulses equal. Wassermann reaction negative. Shoulder-girdle muscles had become wasted and flabby through the long illness. Diagnosis probably scalenus anticus syndrome.

Jan. 11: Wasting of hand progressive, with tendency to main-en-griffe in 4th and 5th digits. Not helped by physiotherapy or sling Full of spirits and quite strong. Weight, 11 st. 6 lb Pericardial wound very firm, one or two points of granulation size of a grain of wheat. Pyothorax healed. Sacrum: area size of penny only unhealed.

12th: *Scalenotomy* (right) under local infiltration Approach as for phrenic avulsion. Right scalenus anticus divided just above its insertion.

23rd: Doing well Gained 8 lb in previous fortnight. Scalenotomy wound healed. Symptoms definitely relieved and interdigital grip stronger.

Feb. 3: Electrocardiogram (fig. 4).

March 21: Very fit. Weight 12 st. Walking about. All wounds healed except granulating area size of halfpenny over sacrum and two tiny scabs over sternum. Radiogram of chest (fig 5)

April 6: Discharged well Cerebration normal. Amnesia from moment she cried out "I can't get my breath," until a few days after the operation when she remembered being in the oxygen tent

DISCUSSION

This is the first successful pulmonary embolectomy recorded outside continental Europe, and is the twelfth in the world literature Apart from its interest as a Trendelenburg embolectomy this case presented a remarkable series of complications, almost any of which might have proved fatal of itself in such a dangerously ill patient

Cerebral complications—In none of the other recorded recoveries were there clonic convulsions, though several of the patients were unconscious for some hours Crafoord's first is the only other case that developed amaurosis, although in a personal communication he informs me that his third case also "had some peculiar symptoms from the central nervous system" My patient also developed marked temporary deafness after about three weeks The amnesia extending over the later and most distressing phase before operation, the time in the theatre, and a varying period afterwards is a feature of all the recorded cases Crafoord's second case, however, vaguely remembered "somebody had been poking about in her chest, as in a dream, and people talking" It is presumably due to temporary suspension of the cerebral circulation and is thus comparable to the amnesia in cerebral concussion. The striking temporary psychological changes in the present ca have not been recorded in any other case

Fig. 6—The patient in March, 1939.

Second embolism—The embolism at the end o twenty-four hours must have been a large one, bu fortunately not too large to pass on into the lef branch where it caused an infarct, followed by large hæmorrhagic effusion Meyer s second cas *died* from a second pulmonary embolism on the 25th day, when she was ready to get up (This raises the question of criterion of a successful case—must the patient walk out of hospital?) A prophylactic ligation of the femoral vein was seriously considered in the present case after the second embolism

Suppurative mediastinitis and pericarditis—These were overcome by drainage and the exhibition of sulphanilamide in full doses (6 g daily) for lengthy periods I have no doubt of the great benefit conferred by the drug The case illustrates that even in a desperately ill patient hæmolytic streptococcal mediastinitis and pericarditis are not necessarily fatal if free and *early* exit is provided for the pus The electric suction pump was of great help at this stage in maintaining effective drainage of the mediastinum and keeping the patient dry of the profuse purulent discharge The seventh cartilage dependent drainage of the pericardium was also amply justified The way in which the large purulent cavity behind the sternum eventually became obliterated was striking

Necrosis of buttocks—At one stage this seemed to threaten a fatal issue The patient was very heavy and the damage seems to have been done during the first few hours of unconsciousness when she was completely immobile and was being nursed in an oxygen tent The difficulty was increased by the fact that change of posture—e g, on to the side—was intolerable for the patient for some days In Crafoord's first case there was extensive necrosis of the buttocks, followed by abscesses and erysipelas The mercury-vapour lamp was used in treatment, but it was some weeks before the patient could tolerate lying on her side for any length of time

Empyema—The advantage of Meyer's manœuvre for maintaining an intact pleura could never be better shown Although a large left hæmothorax formed, and although the mediastinum welled with streptococcal pus, separated only by the filmy transparent pleura, this was enough to prevent the hæmothorax becoming fatally infected at an early stage The collection of blood was aspirated several times on account of its size It was only after four weeks that it became infected, the infection being then probably hæmatogenous as it did not follow aspiration By that time it was possible to treat it safely by suction drainage followed later by rib resection

Scalenus anticus syndrome—This syndrome, which developed after about three months, must be attributed to falling of the shoulders due to the grave and prolonged illness The diagnosis presented some doubt, but was clinched by the therapeutic response

SUMMARY

A summary is given of the history of Trendelenburg's operation for pulmonary embolism and a successful case is described, the twelfth in the literature and the first in Britain

The case showed a number of remarkable post operative features (*a*) Pronounced cerebral symptoms—prolonged unconsciousness, clonic convulsions, amaurosis, deafness psychological changes (*b*) A second embolism (*c*) Suppurative mediastinitis and pericarditis, treated by drainage and chemotherapy (*d*) Hæmorrhagic pleural effusion, later becoming an empyema (*e*) Massive necrosis of the buttocks (*f*) Scalenus anticus syndrome All these conditions were duly overcome

I should like to thank Dr Patrick Nagle, the anæsthetist, for his help in resuscitation, and Sister Jessie Peers for her skilful and devoted nursing of tl patient

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Clinical and Laboratory Notes

HERPES FEBRILIS IN LOBAR PNEUMONL

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ARTICLES and letters in recent issues of Tr LANCET have shown interest in herpes febrilis I a letter in the issue of April 15, Dr Edwin Gooda asked for clinical observations on the incidenc of herpes in pneumonia The following note o cases seen in a large fever hospital may therefor prove of interest The statistics are based on 50 consecutive male cases of lobar pneumonia admitte between 1930 and 1936 to Belvidere Fever Hospit in Glasgow Very full notes were made daily o each case, the occurrence and extent of herpe febrilis being one of the points observed Th impression gained during this period was that herpe was of little significance one way or another, bu when the figures were investigated some surprisin points emerged The accompanying table show that in 152 cases, or 30 4 per cent, there was a herpetic eruption during the course of the pneumonia and the case mortality for this section was 13 82 per cent, whereas for the non herpetic group the case mortality was 17 24 per cent This difference is not great, but it suggests that the presence of herpes makes the prognosis a little more favourable

INCIDENCE OF HERPES FEBRILIS IN LOBAR PNEUMONIA

—		Non fatal cases	Fatal cases	Total	Case mortality (per cent)
Type I	Herpetic	48	1	49	2·04
	Non-herpetic	81	12	93	12 9
	Total	129	13	142	9 15
Type II	Herpetic	41	16	57	28·06
	Non herpetic	111	31	142	21 83
	Total	152	47	199	23·62
Type III	Herpetic	2	2	4	50·0
	Non herpetic	6	4	10	40·0
	Total	8	6	14	42 85
Group X	Herpetic	40	2	42	4 76
	Non herpetic	90	13	103	12·62
	Total	130	15	145	10 35
Total	Herpetic	131	21	152	13·82
	Non herpetic	285	60	345	17 24
	Total	419	81	500	16·2

The figures for cases caused by the different types of pneumococcus show that of the type I cases 34 5 per cent had herpes with a case mortality of 2 04 per cent, which is much less than the 12·9 per cent of the non-herpetic section. Of the type II cases 28·64 per cent. had herpes with a case-mortality of 28·06 per cent.—more than twice the rate for the non-herpetic type I group and greater than the 21·83 per cent. of the non-herpetic type II cases. The paucity of type III cases prohibits definite conclusions, but the figures show that of the 4 patients with herpes 2 died Of the group X cases 28·96 per cent. had herpes, and here the case-mortality of 4·76 per cent. was slight as compared with 12·62 per cent in the group without herpes

When the area of skin, surface involved was considered, it was found that in 137 cases the herpes appeared on the face (usually round the lips, external nares, and less often on the cheeks and ears) and the case-mortality was 14·5 per cent In the remaining 15 cases other sites on the body surface were affected, and of these patients only 1 died (6·6 per cent.).

SUMMARY

Herpes febrilis was observed in 30·4 per cent of a series of 500 male cases of lobar pneumonia Its incidence was greater in type I cases and approximately equal in the cases caused by the other groups of pneumococci. The case-mortality suggests that the prognosis in type I and group X pneumonia was good but was less favourable in type II and type III cases when herpes febrilis was present.

The work in Belvidere Fever Hospital was carried out with the permission of Dr. Thomas Archibald, medical superintendent. The types of the pneumococci were identified by Dr. Robert Cruickshank, to whom I am greatly indebted.

DERMATITIS AND STOMATITIS IN PNEUMONIA TREATED WITH M. & B. 693

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SENIOR ASSISTANT MEDICAL OFFICER (PHYSICIAN), ST STEPHEN'S HOSPITAL, LONDON COUNTY COUNCIL

At the Royal Society of Medicine's recent discussion on the treatment of pneumonia (*Lancet* 1939) the rarity of serious complications following the administration of M. & B 693 was emphasised by Whitby and Gaisford. As severe skin reactions were not mentioned, I made brief reference at that discussion to the following case

A thin female child 16 months old, who had had no previous illness, was admitted to St. Stephen's Hospital on Jan. 9, 1939, with four days' history of cough, fever, and anorexia. She was seen to be ill and febrile, and râles were heard in both lungs. The tonsils were enlarged but only moderately congested. Next day her temperature, pulse-rate and respiration-rate (T.P R.) reached 104·4° F. and 180 and 66 per minute respectively. She was seriously ill, and clearly suffered from pneumonia. The heart rhythm was tic-tac; there were râles and rhonchi in profusion in both lungs, but râles were most numerous in the right lower lobe. A dose of 0·25 g. M. & B. 693 by mouth was given on Jan. 10 and thereafter 0·125 g. four times a day. The child was nursed in an oxygen tent. She became cyanosed on Jan. 11. High fever and toxæmia continued until Jan. 18 when the temperature did not exceed 99·6°. On Jan. 19 and 20 there was only moderate fever and the child had much improved, though râles persisted in the right lower lobe.

Next day (Jan. 21) the child became very fretful, and the temperature mounted to 101°. On Jan. 23 a morbilliform rash appeared over the face, limbs and trunk (T. 102°). M. & B. 693 was stopped, but the eruption became more raised and extensive, and on Jan. 27 a vivid scarlatiniform rash became superimposed This mixed rash persisted, associated with severe toxæmia and high fever. (Jan. 28: T.P.R. 105°, 160, 32.) Although râles were still heard, there were no respiratory symptoms. The leading feature was then the dermatitis which covered the skin in a raised confluent sheet and was resistant to treatment (calamine lotion, Lassar's paste with 3 per cent. tar). On Jan. 31 the T.P.R was 104·8°, 148, 28. The rash was most intense over the face where large blebs showed, and it had spread to the lips and mouth. There was general facial œdema with gross cheilitis, blepharitis and stomatitis. The most serious feature was the severity of the stomatitis, and feeding the child was very difficult. Sulpharsphenamine (0·15 g.) was injected intramuscularly, and repeated applications of Dettol (1 in 30), acriflavine, and Mandl's paint seemed of no benefit. The patient's condition deteriorated further.

On Feb. 4 Dr. Alan Moncrieff suggested using 1 per cent. gentian-violet. This was applied to the mouth first two-hourly, later four-hourly, and subsequently twice per day. Her mouth improved from the first applications of gentian-violet, and likewise her general condition. On Feb. 6 the T.P.R. was nearly normal, and she steadily improved. The superficial layers of the skin peeled off in sheets from Feb. 14 and the skin became irritable. Nevertheless improvement in skin, mouth and general condition continued. By March 1 the skin was nearly healed, and until then lips and gums had bled very easily. The lungs were free from adventitiæ by Feb. 15. In the latter half of February improvement was checked by the development of right otitis media, and on Feb. 20 right aural discharge began—and continued. Otherwise the child made excellent progress and on March 23 the only abnormalities were moderate roughening of the skin and a diminishing scanty right aural discharge.

The total dose of M. & B. 693 was 6·75 g. in fourteen days.

Additional data.—The rash appeared on the 19th day of the disease, and on the 14th day of the administration of M. & B. 693; 6·75 g. of the drug was given in all. Blood-count, Feb. 3 (stomatitis severe): red cells 5,120,000, Hb. 82 per cent., colour-index 0·8, white cells 16,200 (polymorphs 42·0, eosinophils 6·0, basophils 1·5, lymphocytes 37·5, monocytes 13·0 per cent.). Feb. 23 (right otorrhœa): white cells 23,500 (polymorphs 39·5, eosinophils 9·0, lymphocytes 45·0, monocytes 6·5 per cent.) On Feb. 6 the centrifugalised deposit of urine showed a few blood-cells, epithelial cells and calcium-oxalate crystals. No uroporphyrins were detected spectroscopically. On Feb. 18 a catheter specimen of urine showed no abnormality in film or culture On Feb. 3 mouth swabs were examined but no spirochætes were found; on the 20th hæmolytic streptococci were cultured from a nose swab; and on the 22nd an aural swab was taken from which no diphtheria bacilli or hæmolytic streptococci were grown.

M. & B. 693 cannot escape responsibility for the dermatitis and stomatitis described above Similar though much milder skin eruptions have been seen during the administration of M. & B. 693 to pneumonia patients at St Stephen's Hospital. The rash followed dosage of the drug much lower than that recommended by Evans and Gaisford (1938) Noteworthy features were that the stomatitis though gross was not accompanied by neutropenia; that eosinophilia was present (9 per cent. of 23,500 white cells); and that no uroporphyrins were found spectroscopically (one examination only).

I must thank Sir Frederick Menzies, medical officer of health for the county of London, and Dr.

(Continued at foot of opposite page)

MEDICAL SOCIETIES

MEDICO-LEGAL SOCIETY

AT a meeting of this society held on April 27 the chair was taken by SIR TRAVERS HUMPHREYS, the *president, and a paper on the*

British Workmen's Compensation Acts

was read by SIR AMBROSE WOODALL In a short historical survey he represented the acts as a stage in the progressive improvement of the lot of the poor Benefit, however, was limited to 30*s* a week, which was often less than the public assistance allowance Many workmen therefore did not apply, preferring sickness benefit or public assistance The term "compensation" was misleading, for its true meaning was an equivalent to a loss The injured workman had two immediate problems to pay his way and to recover earning capacity Dreading the poor law, he kept going for a time with borrowed money and his weekly compensation Unless he was a patient in hospital, he first attended the surgery of his panel doctor, where he received a sedative—usually bromide—and liniment After about six weeks of this treatment the panel doctor sent him to a hospital, where he would probably undergo a course of massage and radiant heat *Travelling*, hospital treatment, certificates, and appliances cost money, and the workman now became worried, but the panel doctor could only strengthen the nerve tonic The workman would probably then be summoned to Harley Street to be examined by an eminent specialist on behalf of the insurance company After detailed examination and many unintelligible questions he would probably be told he was fit for light work He usually agreed, *as a* weekly wage seemed to offer a way out of his difficulties A day or two later he received the usual notice reducing his compensation to 15*s* a week or less, and when he asked his old employer for light work he was *told* to look elsewhere—another shock to a man whose nerves were already frayed He sought the aid of his union or of a solicitor and was told to sign on at the labour exchange and seek work from all firms in the district, in which search he would be unsuccessful Eventually the case came into court, and the workman, handicapped by ignorance of procedure and anatomy, attempted *to give evidence After* the judgment he was told how much weekly compensation, *if any*, he was entitled to, and after a time negotiations were usually commenced for a lump sum settlement Some men were *so anxious to pay* off their *creditors* that they would take a totally inadequate sum, others, having lost heart, were quite content to drift on with unemployment benefit or poor law relief in the hope of securing the maximum amount The *full* redemption value of a claim was seldom paid The system of lump sum redemption explained the popularity of the acts A lump sum might enable a man to start a small retail business, or, if he were a craftsman, to join the employing class He could also live comfortably for a time, or, if he could get back to work, make provision for his old age

Improvement in the acts must take the form of increasing benefits and widening their scope The ideal arrangement was that the workman should receive more pay than he received in wages This principle, however, was not likely to be applied immediately, and a reasonable modification of the act would be to pay about two thirds of the average wage Many authorities considered that these cases should be taken from the county courts and made part of the social services of the country, this would save an enormous annual expenditure on legal and medical fees The railway companies now paid to members of the National Union of Railwaymen £281,000 a year, *and the number of* cases *heard* every year between the companies and the union did not average more than about fourteen Not *only did the injured railwayman get reasonable* treatment, but every endeavour was made to find him *suitable* work *Litigation* was *replaced by* mutual goodwill Sir Ambrose admitted that his proposal would probably double the cost of working the acts, but he pressed it as a return for the unnecessary suffering inflicted by society on a deserving and unfortunate class, because it would foster a better spirit in industry, and because the expense was small in comparison with expenditure in other directions

DISCUSSION

Judge W B EARENGEY, K C, denied that county-court judges had so much sympathy with the poor that they did not do justice to employers The acts had given the workman a right which he had not enjoyed under the existing law, and it was therefore wrong to say that they had inflicted suffering on him *Once* a weekly payment had been made, a lump sum settlement needed the approval of the judge, who must bear in mind the immediate advantages of a lump sum to the man, and on the other hand the probability of a quick recovery as soon as the troubles *of litigation* were *removed* The *disadvantages* of such a settlement to the workman had been highly exaggerated

Mr J L SMYTH, a member of the Trade Union Congress, said that the lenience of the county court judges to the workman, which induced them to stretch the law in his favour, was the best evidence that the acts needed reform The right of the workman at common law was practically useless, for if the injury was caused by the carelessness of a fellow workman the right was barred by the doctrine of "common employment", and the workman had always to establish personal negligence or breach *of statute by the employer*

Dr KENNETH MCFADYEAN pointed out that unless a workman belonged to a union, there was no provision for training him to a new occupation

Mr R C ELMSLIE, F R C S, remarked that the lot of the workman was better than that of the professional man, for the doctor or lawyer who suffered injury had to bear his own burden Moreover, the injured workman might be entitled to 30*s* a week but the sick workman could only obtain 16*s* a week under national health insurance The amount expended in compensation every year was about

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D S Sandiland, medical superintendent of St Stephen's Hospital, for permission to publish this case; Dr Alan Moncrieff for help in the management of the child, Dr G W Goodhart, of the L C C Group Laboratory, for pathological investigations, and the nursing staff concerned for their skill

REFERENCES

Evans, G M., and Gaisford, W F (1938) *Lancet*, 2, 14
Lancet (1939) April 8, p 822

£13,000,000; he asked whether the country was receiving proper value for this expenditure in terms of men returned to work Most accidents were not the fault of anyone, and to abolish the doctrine of common employment would not assist many workmen. A tribunal similar to the court of referees under the unemployment insurance system would settle the large majority of disputes with ease.

Mr V. SAMUEL (barrister) spoke of the work of the Bentham committee, which advised, through its "poor man's lawyers," workmen who would otherwise not obtain legal assistance This committee had suggested compulsory insurance of liability to pay compensation, the extension of common-law rights, and the payment of compensation for all illnesses arising out of the employment

Mr. W. H. THOMPSON (solicitor) said that the acts had been passed to interpret an obligation owed by society to workmen Under the industrial transference scheme approved societies, public-assistance committees and other bodies responsible for assisting injured workmen, struggled to push candidates from one to the other The practical working of the acts presented a much more sombre picture than was drawn on a basis of theory Insurance companies pocketed 40 per cent. of premiums, and the workman had to pay legal and medical charges. Moreover, he was deprived of his rights in all sorts of unseen administrative ways A barrier to reform would be found in the large vested interest of the medical profession in the examination of workmen suffering from injury and industrial disease and in the giving of evidence in court.

Sir ARNOLD WILSON, M.P, said his attention had been drawn to the shortcomings of the acts by the hard cases that had constantly been referred to him by general practitioners in his constituency He thought compensation should be at the rate of two-thirds of the man's wages without an upper limit This scheme would work well and would only cost 15–25 per cent. more. No country in Europe had so low a scale of compensation in comparison with wages, or failed to make the employer liable for medical treatment, or to make statutory provision for rehabilitation. He leant to a system under which medical referees would examine the patient privately. They would generally reach an agreement, for the truth was much more easily arrived at when a man was treated sympathetically. He would sooner retain the county court than set up a special tribunal; there were not too many judges to make uniformity of treatment possible. Only 2 per cent of all compensation cases went to the court; 90 per cent. were terminated after less than twenty-six weeks, and very few went to court before the man had been disabled three months The 2 per cent represented, therefore, a small number of the more serious cases Such disputes ought to be settled by litigation. He did not like lump-sum payments, and they were not allowed by the majority of civilised countries They were bad unless combined with effective rehabilitation. He hoped for a Rehabilitation Act, under which compensation would be continued until recovery. Legal persons interested in the problem should do their best to restore medical men to the position of persons charged with rehabilitation

Prof HERMANN LEVY said he was much impressed by the benevolent and charitable spirit which animated judicial decisions on these acts, and by the regret of judges that the law did not go far enough. More medical and industrial assistance should be given [illegible] the courts In Germany the Berufsgenossenschaften (mutual indemnity associations), on which employers and men of the trade concerned were represented, gave the court invaluable advice on the special circumstances of the industry.

TAVISTOCK CLINIC

AMONG the lectures delivered at the clinic this week was one given on May 1 by Dr. EMANUEL MILLER on the relationship between

Neurophysiology and Psychology

He thought there was no need for the dog-fight that so often happened when neurologist and psychologist came together Both dealt with the same subject in different languages In relating the two subjects, there were two approaches with different fields of reference Neurophysiology was concerned with an instrument of behaviour, an instrument that could be described and studied. The nervous system could be assumed to be composed of fundamental units which could be built into a hierarchy of higher structures still subservient to their constituent units To what extent that law held good through the whole range of behaviour was the burden of the lecture The neurologist believed that all the intervening elements between receptor and effector were of the same kind Despite this doctrine, differences in value of responses were seen and required explanation by the neurologist The reflexology of Bectorew and Pavlov had been so modified by further researches as to suggest that the edifice of reflexology had collapsed The analogy of the telephone exchange, for example, was falsified by an example from electricity: a changing electric sign by which a message moved across a screen was effected by an operator who inserted a a stencil-contact which was seen as light If the totality of that switchboard were mechanical, so might the nervous system be But a symbolic event had taken place and the message conveyed to the reader bore no relationship at all to the electrical arcs and circuits At each end of the machinery was a person who understood the message and belonged to the same symbolic level. The operator might have shouted the message from a balcony but chose instead to use electrical machinery. Take those two cultural persons away and the machine was meaningless In the same way, a stimulus was received at one end of the nervous system, it was meaningless until the oscillations of the æther impinging on the retina had undergone a synthesis not explicable in neurological terms The neurologist was apt to confuse a sensation of red with a red sensation Events in an instrument and events in an organism were different, and events in awareness must be described in the language of awareness

The method of approach of neurology was different from that of psychology, it claimed to be purely objective while psychology was said to be incapable of objectivity. The psychologist could reply: Why do you call a set of phenomena "subjective"? We regard them as quite as objective as your observations The neurologist retorted that they are incapable of ordinary measurement and came from inside Lashley's experiments on rats in mazes indicated that the rate of learning depended on the quantity rather than on the locality of any brain lesion inflicted. The integrity of the visual, olfactory or tactile system was not the essential factor in enabling them to find their way out of a maze This showed that the rat's brain worked as a whole and the alleged reflex arcs could be switched over to other areas

Coghill's embryological study of the behaviour of amblystoma showed that there were total forms of integrated muscular pattern even when there was no evidence of any nervous arcs, when muscle had developed but not neural structure The organism acted massively rather than on a basis of neuro muscular reflex arc configurations The latter grew into and implemented the pre existing pattern Reflexology was now turned hind forwards If simple instinctive responses preceded delicate and complex ones, the instinctive apparatus was much older than the reflex, which was imposed on it The amblystoma embryo lived through its muscle movements in the absence of a nervous system Therefore neurology failed to explain entirely the whole reactions of an organism, and there was good reason to criticise reflexology as an explanation of the totality with which psychiatrists were concerned

Up to the time of Henry Head the study of aphasia had been an anatomical one More and more of the cortex had been included in the speech area, but Head had found it still insufficient and had been obliged to describe aphasia in terms of grammar rather than of areas The translation of a symptom into Greek did not explain it Despite the fact that the lesion might be localised, the whole understanding of a language defect had to be explained in terms of *language* The *loss of a piece of cortex did not* account for or help the loss of a particular piece of language structure

When it came to imagery the neurologists used the most extraordinary terms "Image traces in the cortex" were spoken of, the traces of past events being somehow registered in the cortex The whole nature of imagery seemed to make the use of such language impossible Experiments suggested that an image had a specifically organic correlation, for example, after images on the retina But certain types of image—especially those seen in certain kinds of children—showed clearly that that chemical interpretation was untenable Eidetic images could not be explained in this way, they were perceptual in intensity and did not conform to the ordinary laws of memory Sometimes they had a dynamic quality, and evoked other images immediately afterwards The image must be regarded as a process and not a structure and the neurologist must explain it as such It was a transaction in the same way that perception was The image was made of history and all histories belonged to time Neurology pre eminently belonged to space Every word used in language was not an object but a class Even "Yes" was a class name When it came to the description of events the neurologist must hand over to another discipline

If the neurologist said that every neurosis had its psychosis or mental event then there were no forms of behaviour not capable of some neurological description As the instrument seemed to predetermine the psychological life—knock a man on the head and he became unconscious—the neurologist would say that neurological events preceded psychic events The reductio ad absurdum of that argument was that it abolished *consciousness* altogether All we knew of consciousness was just laryngeal behaviour That hypothesis could be held, and no conclusions about it *on the level of science* could be drawn If there was room for consciousness after all, what did neurology tell us about conation, affectivity and cognition? Had they a local habitation as well as a name? *Cognition* and *recognition* lay in integrated cortical activity There was evidence that the affective life was closely related to the hypothalamic and thalamic apparatus Having isolated a local structure, however, did not explain affectivity The various forms of thalamic syndrome showed that affectivity was related to that region of the brain, but the problem of feeling, emotion and instinct went beyond the confines of the central nervous system and arose from every tissue of the body The solution was not in the dethroning of neurology and enthroning of psychology, but in the assertion of a biological point of view speaking in terms of the organism. Both disciplines must abdicate in favour of a biological attitude Psychology must give up many of its trimmings and neurology many of its claims Both were far too narrow Behaviour was anterior to even an autonomic nervous system, but not to an integrity of the organism as a whole For the study of behaviour was that of a vital series of which neural events were an essential part but not the whole It needed a universe of discourse capable of describing *its configurations*

MANCHESTER MEDICAL SOCIETY

AT a meeting on April 5 a discussion on the

Treatment of Cancer of the Breast

was opened by Mr H H RAYNER He recalled a statement made twenty-five years ago by a surgeon that in thirty years' practice he could not remember one patient with breast cancer who had been cured by operation Possibly that was an unduly pessimistic observation but it did bring home to us that real progress had been made in the treatment of the disease, mainly because of the adoption of the radical operation, for of the patients operated on for cancer of the breast in stage 1 50–80 per cent now survived for at least ten years Of all the patients submitted to the radical operation, however, in only about a quarter to a third was the disease in an early stage Probably the proportion of early cases was much smaller than this twenty years ago, the slowly progressing appreciation amongst women of the significance of a painless lump in the breast and the diminishing dread of surgical operations were factors tending to increase the proportion of early cases The fact must be faced that in a proportion of cases the disease produced no visible or palpable change in the breast perceptible to an observant woman until it was far advanced—for example, a deep seated growth in a firm and well developed breast commonly betrayed no evidence of its presence until there was obvious enlargement of the axillary lymph glands

The accepted grouping of cases into three stages according to the extent of the disease should be supplemented by other details, such as the histological type of growth, if it was to allow safe comparison between different methods of treatment Mr Gordon-Taylor's recently published results were noteworthy for the efficient way in which the patients were followed up and for their excellence, for of his 113 patients in stage 1, 84 per cent survived at least ten years In Mr Rayner's own series of 128 radical operations, all of which were confirmed histologically, 45 cases were in stage 1, of these, 14 (31 per cent) were known to have died from cancer within ten years of operation of the 14 failures 8 were in patients whose original growth was situated at the extreme inner periphery of the breast overlying the sternal edge Of the 83 stage 2 and 3 patients 62 (or 77 per cent) had died from cancer within ten years, of the 9 known to have survived for ten years several had lived for much longer periods and were still apparently cancer-free Not all the deaths were due to recurrence and hence it was difficult to give results in a simple form.

Dr. **Ralston Paterson** said that although surgery was the dominant method of treatment in carcinoma of the breast, radiation (radium and X ray) also had a very real place. It could be used alone with results not quite as good but certainly comparable stage by stage with surgery alone, where cases were unsuitable for the radical operation It was the only treatment for late cases, in which it was occasionally curative and consistently palliative Used in conjunction with surgery it definitely improved the probabilities of permanent cure. Radiation therapy had to be of a radical nature, a considerable reaction of normal tissue being unavoidable In radium therapy this required an extensive implantation of the whole breast, axilla and supraclavicular zone in continuity. In X-ray therapy a similar zone had to be irradiated to the limits of skin tolerance by means of "tangent" fields.

The combination of methods now adopted at the Radium Institute was: stage 1, short preoperative course followed by immediate radical surgery; stage 2, radical surgery followed by postoperative intensive X-ray therapy to the whole postoperative zone, axilla and neck; stage 3, radiation first (radium or X ray), amputation in the face of failure of resolution, stage 4, radiation only.

A plea was also made for immediate admission to hospital of all early breast carcinomas, and attention was called to the dangers of local excision or local mastectomy except where the surgeon is prepared to proceed at once on naked-eye diagnosis to the radical operation.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Medicine

Clinical—Laboratory—Therapeutic. (9th ed.) By G. E. **Beaumont**, D.M. Oxfd, F.R C.P., physician to the Middlesex Hospital; and E. C. **Dodds**, M.V.O., M.D., D.Sc. Lond., Courtauld professor of biochemistry in the University of London and director of the Courtauld institute of biochemistry at the Middlesex Hospital. London: J. and A. Churchill. 1939. Pp. 431. 15s.

This pioneer of the Recent Advances series has always been a valuable and popular book, though the clinician may feel that in spite of its comprehensive title laboratory tests and procedures have bulked very large in its pages. The new edition opens with a chapter on the sulphanilamide drugs, giving their names, formulæ, and chemical properties with admirable succinctness and indicating their fields of usefulness so far as these had been demarcated in the earlier reports on them.

Vitamins A to E plus K occupy chapter II Ketogenic diets disappear from the treatment of urinary infections, but mandelic acid remains. The dietetic treatment of diabetes has been largely rewritten, with the incorporation of the new food analyses of McCance, Widdowson and Shackleton Preliminary starvation, followed by a rather elaborate series of graduated diets, is recommended; in the largest of these the carbohydrate allowance is only 135 grammes, and in all of them the daily allowances in grammes of carbohydrate, protein, and fat are calculated to one or even two places of decimals! Surely the laboratory worker does not credit the clinician with that degree of accuracy; one might as well recommend the counting of every pulse with the electrocardiograph. We would question the statement that "with protamine zinc insulin the blood-sugar begins to fall in nine to eleven hours"; there is evidence that protamine zinc insulin exerts a considerable action much sooner after injection than that, and many physicians therefore prefer to give it in the morning rather than, as here recommended, in the evening. In the account of diabetic coma, the importance of dehydration in the pathogenesis and the clinical picture of the condition scarcely emerges, and in its treatment drugs of such doubtful value as strychnine and Coramine are given a place A description of gastroscopy is introduced. The preface states that the account of the medical and surgical treatment of gastric and duodenal ulcers has been largely modified in accordance with present knowledge. The reader may therefore be disappointed not to find an adequate discussion of the rôle of surgery in treating chronic uncomplicated ulcer, or of the types of gastric operation now practised and the risks they involve—matters of great moment to the physician in charge of a difficult case

Dr. Bedford has supplied a new series of electrocardiograms, and the value of chest leads in the diagnosis of coronary disease is emphasised Treatment in cardiac disease is well summarised, digitalis is given by the ultra-precise American method of calculating the dose in relation to the body-weight. There is an excellent chapter on the sex hormones. A number of new laboratory procedures have been introduced, the old chapter on tests of pancreatic function has been omitted, and there are many minor alterations.

The book has neither increased in size nor diminished in usefulness; such critical notes as we have made should be construed as a tribute to its general excellence.

Analysis of Parergasia

By **Gladys C. Terry**, formerly research assistant in psychiatry, Phipps psychiatric clinic, Johns Hopkins University; and **Thomas A. C. Rennie**, M.D., associate in psychiatry in the clinic New York: Nervous and Mental Disease Publishing Co. 1938. Pp. 202. $4.

Interest in schizophrenia is at present predominantly therapeutic, and is sometimes accompanied by indifference to clinical study and to any forms of treatment other than those making use of insulin and Cardiazol This interesting book is a timely exposition of how much can be learnt and done by solid psychiatric methods Prof. Adolf Meyer of Baltimore has for more than a quarter of a century been urging a psychobiological conception of schizophrenia (which he prefers to call parergasia) and has insisted on his pupils putting it to practical account in treatment. The study of 77 cases here presented by two of the workers in his clinic indicates the value and the limits of the method employed. The case-histories were for the purposes of the inquiry carefully coded and charted, and the reaction patterns divided into six groups, in which aggression, conversion, passivity, deliroid features, affective disturbance, and defeatism were prominent. Nearly half the cases had at the time the monograph was written (mostly four or five years after treatment) recovered to the point of being able to live outside hospital; details are given as to the nature of this recovery and the condition of the other patients who are now living and in need of institutional care It is concluded that there is no significant relationship between outcome and clinical reaction type, and that the factors prognostically favourable are sympathetic environment to which patients can return, interests, goals and pursuits in keeping with their ability; onset of the psychosis in a setting of unusual strain that can be modified, intact rapport, and both will and ability to coöperate in treatment In the psychosis itself hopeful features are intact thinking and personal appearance, absence of hallucinations, affective admixture, and the presence of a temporary infection None of the cases in the series was treated with insulin or cardiazol This is a careful and admirably sensible clinical study in a complicated field

Aids to Public Health

(4th ed) By LLEWELYN ROBERTS, M D (in hygiene), D P.H , deputy medical officer of health, borough of Ealing London Baillière, Tindall and Cox 1938 Pp 263 4s

THIS little book now appears in entirely new guise Good as was its predecessor (by Dr W G Aitchison Robertson), the new edition has lost nothing in the rewriting, and cannot fail to be of value to the student who is preparing for his finals The subject matter is excellent and right up to date In one small respect it might have been improved—by giving references in footnotes to the statutes, orders or regulations upon which local authorities might base their actions For example, we read that "Persons in infected households must notify the local authority if they possess any books from a public library", a footnote indicating Public Health Act, 1936, S 155 (3) would be useful both to familiarise the student reader with the details of sanitary law and to remind him later, when he has become an administrator and still keeps the "Aids" on his shelves, of the proper course of action The book includes a useful innovation in a chapter setting out the framework of central and local government administration and the openings which are offered to medical students who wish to enter the public health service

Über die Liebe

By Dr med H VON HATTINGBERG Munich: J F Lehmann 1938 Pp 362 RM 5

IN twenty-five years of practical experience as a psychotherapist, Dr H von Hattingberg has found in all the patients who have sought his help a disturbance of the capacity to love Too many persons today, he says, are misguided by false notions of love, a condition which cannot be remedied by anxiously preventing these notions from interfering with their emotional life In this book he tries to explain perversions and inhibitions by revealing the motives behind them and thus to suggest to sufferers a way out of unnecessary misery He has treated his material in a popular form and, though he sometimes expresses known facts in a novel way, he does not set out to establish any *new concept* The main section of the book deals with what he calls "sham" love, such as masturbation, perversions, mechanical sexuality, homosexuality and jealousy, and inhibitions of love such as impotence, frigidity, matrimonial conflicts and "coupled neurosis" This section is intended to help "love sick" neurotics by giving them an insight into their problems To the medical and psychotherapeutic reader the first and third sections will be of greater interest, since they are concerned with an attempt to incorporate the ideas current in modern Germany into a scheme of psychology, which was developed on theories now repudiated there The author tries to prove (in six pages) that Freud's approach is wrong, though his own psychotherapeutic practice has clearly been based on it His criticism of the various schools of psychology, his attitude towards love and sex in pre-Hitler Germany, and his exposition of the attitude of the Third Reich towards love, evoke the picture of a psychologist who is groping for a firm foothold but whose mental outlook wavers between the irreconcilable convictions of two generations

Doctors in Shirt Sleeves

Edited by Sir HENRY BASHFORD, F R C P. London Kegan Paul, Trench, Trübner and Co 1939 Pp 204 10s 6d

SIR Henry Bashford says he has found it a pleasant, though not an easy, task to select extracts from the "happy go lucky" contributions to the Grains and Scruples which appeared in THE LANCET between July, 1936, and December, 1938 He has quoted from only twenty—that is, from less than a sixth of the articles published during the period—choosing those which in his view are likely to make most appeal to the general public These, in the words of the subtitle, are the "musings on hobbies, meals, patients, sport and philosophy" of a mixed bag of doctors of different occupations, generations and experience Generally one, sometimes two or three, of the lighter dishes are chosen from the varied menu originally supplied by the author, and the fare is no less palatable à la carte than when it formed part of a full course meal The arrangement is as apt as the selection The opening chapter comments on modern youth, as exemplified in the medical student, the closing chapter reflects on retirement—with a garden In between, three practitioners—from the west country, from the back streets of a midland town, from a London suburb—show (as one of them puts it) that medicine is an extremely individual matter A surgeon praises the life of a surgeon as the best job in the world, a physician is less enthusiastic about his own work There are five philosophers, of whom one pours scorn on false biological analogies and inexact reasoning, another defends spiritual values against a materialistic philosophy, and a third, using a sick child's toys as a peg, shows at any rate that man tends to imbue the *materials* that surround him with spiritual meaning, the fourth gives reason for his conclusion that medicine as such has no philosophy, and the fifth analyses war as a social disease A biologist analyses medical students (and finds none wholly foolish) and elaborates the thesis that man is the greatest undeveloped baby among the mammals One essayist recalls his hobbies, two others memories of a public school and of work and play in India Another passes easily from consideration of an old diary to the duties and interruptions in the day's work of a non-clinical professor Three of the essays recall the vivid personality of writers no longer with us—Sir Squire Sprigge, Prof A E Boycott, and Prof C C Okell Some of the omissions will be regretted and it is a pity that Sir Henry's modesty should have deprived readers of his own contributions Enough is retained to make a book of substantial size and attractive appearance which will certainly create a happy hour or two for lay as well as medical readers

British Journal of Surgery

The April issue (vol. 26, no. 104) contains the following articles:—

Tuberculosis of the Spleen with Tuberculous Subphrenic Abscess. By W. G Gill and W. N. Mann (London) The case seems to be unique in the literature Shoulder-tip pain with unexplained pyrexia suggested subphrenic suppuration, the pus removed was sterile The whole spleen was occupied by a single abscess

Adolescent Deformities of the Acetabulum. By John Gilmour (Newcastle-on-Tyne) An investigation into the nature of protrusio acetabuli Primary protrusions are regarded as arising from distortion of the growth focus, due to an acceleration in the rate, and an advancement in the timing, of primary epiphyseal ossification Treatment is discussed

The Relationship of Acetabular Deformity to Spontaneous Osteo-arthritis of the Hip-joint. an investigation of the intra-articular factors which predispose to osteo-arthritic degeneration By John Gilmour Increase in the depth of the acetabulum is said to impair the fluid mechanism and increase the susceptibility of the joint to trauma and infection

Osteitis Fibrosa Disseminata. By Mark Coleman (London) Report of a case admitted to hospital with a history of recurrent fractures due to trivial injury. The association with pigmentation of the skin and precocious puberty in females is discussed

Complete Thyroglossal Fistula By Victor J. Kinsella (Sydney). Cure has been effected in one case by ligation of the tract and careful closure of the skin. There are two types, the tubular and the racemose The anatomical relations are discussed.

The Closed Operation for Intracapsular Fracture of the Neck of the Femur. final results in recent and old cases By Thomas King (Melbourne). The results are described in 50 cases of recent fractures and in 30 cases operated on three weeks to three months after the fracture The author reports success from an operation which combines the use of a nail and a fibular bone peg

The Problem of "Black Out" in Aviation (Amaurosis Fugax). By Wing-Commander P. C. Livingston The author's personal experience is described The cause of the condition is gravity, brought into action, in this case, by a violent turn in the air, roughly at right angles to the initial course Postural and mechanical methods of combating "black out" are briefly discussed

Carcinoma of the Lower End of the Common Bile-duct. By John C. Dick (Glasgow). The macroscopic and microscopic examination of 13 cases which came to autopsy suggests that the condition is of slow growth and of very low-grade malignancy, and that cure by operation should be feasible.

Operative Treatment of Stenosis of the Vesical Neck By W. K. Irwin (London) A transvesical operation is described in which the author's clamp incisor is used This has given uniformly good results in 48 cases

Observation on Simple and Malignant Pathological Conditions of the Breast By Thirza Redman and J. T Hewitson (Birmingham) The 205 cases diagnosed as simple have not developed malignant changes during a period of 3–8 years Operation for cancer in the early stages has given a survival-rate of 67 9 per cent

Massive Necrosis of the Muscles of the Leg after Operation for Removal of a Bone-graft from the Tibia. By N. Ross Smith (Bournemouth) The graft was taken from the tibia with the knee acutely flexed All the muscles of the leg completely necrosed, and the limb, amputated 18 months after the original operation, showed the muscles replaced by fat. The ætiology is discussed.

Detachment of the Medial Epicondyle of the Humerus with Displacement into the Elbow-joint By E. J. Radley Smith (London) Case-reports are given of 32 cases Abduction force is the cause, and in nearly half the cases there was proof of a dislocation. The diagnosis is radiological; and ulnar-nerve injury is a common complication

Congenital Dislocation of the Hip. By Bryan McFarland (Liverpool) A method of treatment by traction in the extended position has been successfully used in 18 cases, most often in combination with an operation to form an acetabular shelf Many advantages over the usual abducted position were found

Chronic Non-tuberculous Disease of the Epididymis By Donald McGavin (London). The condition is described as being quite common The clinical histories and operative findings are given in 7 cases, the causes being classified as inflammatory, obstructive and vascular.

The Pituitary Adenomata: a follow-up study of the surgical results in 338 cases By W R. Henderson (Leeds). The paper is concerned with the after histories of sufferers from tumours of the pituitary in Dr. Harvey Cushing's series of 338 cases Pathology and operative technique are briefly described, and there is a very full analysis of the early and of the late results of operation.

Surgery of the Adrenal Cortex. By L R. Broster (London) A critical review of the development of medical knowledge of the relationship of adrenal disease to sexual abnormalities, and of the biological tests and the isolation of male hormone; together with a discussion of the results of operative treatment.

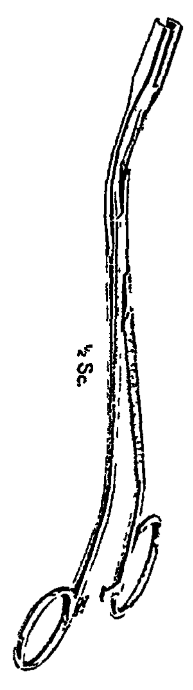
There is also a tribute to Dr. Harvey Cushing on the occasion of his seventieth birthday; and an appreciation of the late Mr. Graham Simpson. Notes on several rare and obscure cases are appended

NEW INVENTIONS

FORCEPS FOR INSERTING RADIUM INTO THE CERVIX

The insertion of a radium applicator into the cervix uteri is usually simple, and is carried out by means of the instruments normally found in a well-equipped operating-theatre. None of these is, however, really suitable for this procedure: some are clumsy and obstruct the view, and most do not grasp the applicator satisfactorily, so that when even the slight amount of pressure necessary for the insertion is applied the applicator tends to tilt, necessitating manual replacement and unnecessary exposure to radium

These considerations led to the development, in collaboration with Prof James Hendry, gynæcologist to the Glasgow Royal Infirmary, of the forceps shown in the figure. The forceps hold almost any radium applicator in common use, without unnecessary pressure on the radium container and at a convenient angle, and permit a clear view of the field They are especially helpful when used with a form of gum-elastic tube for holding the radium. This tube can be bent and will retain the bend for an appreciable time, facilitating introduction into cervices that are difficult to enter or abnormally placed



The forceps were made for me by Messrs. C F. Thackray of Leeds, who also supplied the gum-elastic tubes that are specially designed for radium use

Robert R. Morrison, M.B. Glasg, D M.R E.
Radium therapist to Glasgow Royal Infirmary.

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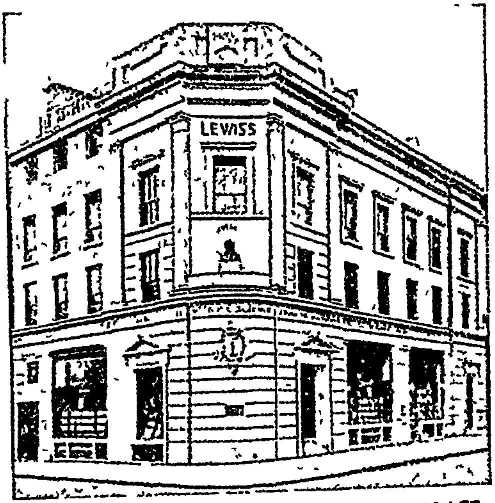

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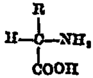
THE LANCET

LONDON: SATURDAY, MAY 6, 1939

BIOCHEMISTRY OF MALIGNANT GROWTH

Many attempts have been made to discover a chemical or physicochemical basis for cancer An account of such investigations would fill a bulky volume, but none of them has established any significant differences between the normal and the malignant cell, either as regards its chemical composition or its physicochemical condition On the contrary, the results of these numerous investigations have seemed to lead to the surprising conclusion that, in spite of the difference in the biological behaviour of these two types of cells, there is a close resemblance in their chemical make-up An important advance was made by Warburg's observation that the cancer cell, unlike most normal cells, can live and carry out its metabolic functions in the absence of oxygen, resembling in that respect a more primitive type of cell, such as yeast But this property is not strictly confined to malignant cells, it is shared by some other types, both normal and pathological, belonging to the higher animals, and while it accounts for the greater independence of the malignant cell and its ability to grow through tissue spaces, where the oxygen tension is low, it gives no ready explanation for the power of growth possessed by malignant tumours

A paper by Prof Fritz Kögl,[1] the noted biochemist of Utrecht University, promises to open up a fresh approach to cancer on chemical lines, for he is able to announce new discoveries about the amino acids which result when the proteins of malignant tumours are hydrolysed by boiling with acid Amino acids are the relatively simple chemical units of which the complex protein molecule is built up, and the many which have been isolated all have a fundamental similarity of structure They consist of chains of carbon atoms of varying length, and the penultimate carbon atom of such a chain always carries the acid group COOH and the basic amino group NH_2 A third valency of this penultimate carbon atom carries a hydrogen atom and with the fourth valency it is tied to the rest of the carbon chain Diagramatically this arrangement is represented by the formula given below, where R is the carbon chain, which varies for the different amino acids A carbon atom carrying *four different groups* is called an asymmetrical carbon atom, and since these four groups are arranged round the carbon atom in space, and not (as on paper) in a plane, two possible arrangements in space are possible, which have the same relation to each other as any object has to its mirror image or as the right hand to the left Any substance having such an asymmetrical carbon atom exists therefore in two forms (stereoisomerides), having exactly the same chemical composition but differing from each other in the spatial arrangement of the four groups attached to the asymmetrical carbon atom, and a third (racemic) form in which the two stereo isomerides are present in equal proportions The presence of an asymmetrical carbon atom in a compound manifests itself physically by the ability of a solution of the compound to rotate the plane of polarised light, and two stereo isomerides rotate polarised light to the same extent but in an opposite direction In the racemic form, which contains the two stereo isomerides in equal proportions, the effects on the plane of polarised light balance each other, so the racemic form is optically inactive



$$\begin{array}{c} R \\ | \\ H-C-NH_2 \\ | \\ COOH \end{array}$$

The biological significance of these chemical facts is that when the normal living cell builds up organic compounds containing asymmetrical carbon atoms, it always forms one of the two optically active stereo isomerides, whereas synthesis in the laboratory always leads to the optically inactive racemic form Moreover, the ferments present in the body can split only one of the two stereo isomerides—namely, the one formed in the body—and cannot attack the other stereo-isomeride Thus the amino acids found after hydrolysis of proteins of normal tissues are all optically active and represent one of the two possible stereoisomerides of each acid But when Kögl and Erxleben examined the mixture of amino-acids obtained by hydrolysing the proteins of malignant growths they found that while some of the amino acids were represented entirely in the form of the normal stereo isomerides—present in the proteins of normal cells—a few were present also partly in the form of the other, optically *antagonistic, stereo isomeride The amounts of* the optical antagonist that were present varied considerably for the different amino acids For some of these *acids the figures are too small to be* convincing, but for such amino acids as leucine, lysine, and valine, and particularly for glutamic acid, the amounts of the abnormal optically antagonistic stereo isomeride were so considerable as to leave no doubt that the abnormal stereo-isomerides had entered into the structure of the proteins of malignant cells The most striking results were always found for glutamic acid, which was represented by its abnormal stereo isomeride in amounts varying in different tumours from 15 to 42 per cent of the normal stereo isomeride

Glutamic acid plays an exceptionally important part in the intermediate metabolism of proteins, and quite recently it has been shown by Fildes and his collaborators[2] that glutamine, a substance closely related to it, is an "essential growth substance" for most strains of streptococci It has also to be noted that the presence of a few abnormal stereo isomerides in the chain of amino-acids, which go to the building up of a protein molecule, will make these chains more resistant to the action of the normal ferments which regulate the building-up and the breaking-down of the cellular proteins. The proteins of the cytoplasm of the cell are not static; they are always undergoing synthesis and disintegration It is to be expected, therefore, that the presence of a few abnormal stereo-isomerides will interfere profoundly with the normal processes of cellular metabolism. It seems that one must postulate for the cancer cell an alteration of the normal ferment system in the sense that this system has lost its selective power to synthesise protein from only one stereo-isomeric group of amino-acids. Autonomous growth—which means essentially the autonomous synthesis of protein—is the criterion of malignancy, and it is not difficult to correlate this property with the loss of selectivity on the part of the ferment system which regulates the protein metabolism of the cell. One must bear in mind, however, that the presence of abnormal metabolites in malignant new growths may be the result, rather than the cause, of their irregular growth, and may owe its origin to such factors as inadequate vascularisation, processes of cellular degeneration, infection, or interference with the vital processes of the organ by the growth which has arisen in it. The neoplasms analysed so far by **Kögl** and **Erxleben** have been transplantable tumours of the mouse (Ehrlich's adenocarcinoma) and of the rabbit (Brown-Pearce carcinoma) and human carcinomata of the mamma and of the ovary. These studies require, therefore, to be extended to as many different types of malignant tumours as possible, including the filtrable fowl sarcomata, and also to types of pathological overgrowth other than malignant tumours, such as granulomata, benign tumours, infective papillomata and the various non-malignant cellular hyperplasias due to viruses. Some of these investigations have already been begun at Utrecht. If the presence of abnormal stereo-isomerides of amino-acids proves to be a specific and regular concomitant of malignant growth, an important advance will have been made in our understanding of the biochemistry of cancer. It is also likely to provide information on the mode of action of the viruses capable of transforming normal cells into malignant cells.

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[1] Kögl, F, and Erxleben, H, *Hoppe-Seyl Z* 1939 258, 57

[2] McIlwain H, Fildes, P, Gladstone G P, and Knight, B C J G, *Biochem. J* February, 1939, p 223

HÆMORRHAGE IN JAUNDICE

Faced with a case of jaundice, whether obstructive or hepatogenous, even the most courageous surgeon may fear to operate. The tendency of these patients to bleed has long been recognised, and none of the various explanations of it has produced an effective remedy or even a means of predicting abnormal hæmorrhage. During the past few years, however, the mystery surrounding this subject has become less profound. The first relevant observation was that of L. M. **Roderick**, who showed in 1929 that in the hepatic necrosis of sweet-clover disease in cattle there is a hæmorrhagic state and a deficiency in plasma prothrombin. In 1935 a similar deficiency was demonstrated by **Quick** and others[1] in the plasma of jaundiced patients and in the same year **Dam**[2] of Copenhagen found that young chicks fed on a diet adequate except for certain fat-soluble substances developed a fatal hæmorrhagic disease with erosions of the gizzard. This disease was associated with a fall in the plasma prothrombin and could be prevented by feeding the chicks with alfalfa or the non-saponifiable non-sterol fraction of hog's liver fat. For the factor protecting against this hæmorrhagic tendency **Dam** suggested the name vitamin K (Koagulations-Vitamin), and since that time it has been shown to have a wide distribution It is found in kale, spinach, carrot tops and tomatoes, as well as some vegetable oils, more remarkable, it develops, apparently by bacterial synthesis, in putrefying fish meal and casein, it occurs in numerous micro-organisms such as *Bacterium coli*, and it may apparently be formed by bacterial activity in the alimentary tract, for it is recoverable from human fæces even in jaundiced patients Exact information about its chemical nature is lacking although highly potent extracts have been made. **Klose**, **Almquist** and **Mecchi**[3] think it is probably a complex unsaturated hydrocarbon.

The clinical applications of this knowledge derive from **Quick**'s observation[1] that the prothrombin coagulation-time of jaundiced patients is increased, **Smith** and his associates[4] have confirmed the presence of this deficiency by a different method, both clinically and under a variety of experimental conditions. The lack of prothrombin seems to be a consequence of the lack of vitamin K and may be caused by defective absorption from an intestine in which there is no bile or by inability of a damaged liver to synthesise prothrombin from the vitamin Numerous observations have now been published which support these suggestions and show Quick's prothrombin coagulation-time to be a valuable indication of the tendency to bleed; if the "prothrombin time" is increased to more than twice the normal value hæmorrhage is likely to take place. The clinical reports go further, however, and show that administration of vitamin K and bile salts by mouth will often reduce the prothrombin time to normal and banish the danger of hæmorrhage. On another page of our present issue Mr. **Illingworth** records his experience with 20 cases of jaundice. He estimates that hæmorrhage is responsible for about 12 per cent. of postoperative deaths in such cases and finds the prothrombin time a valuable means of assessing the risk of this complication. He believes that this risk can be greatly diminished, for the prothrombin time was lowered by administration of a preparation containing vitamin K, but he is apparently not sure that the active factor is the vitamin itself **Butt**, **Snell** and **Osterberg**[5] attach more importance than ILLINGWORTH to the simultaneous administration of bile salts, but even with a normal diet, which is rich in vitamin K, they have sometimes found supplementary doses of alfalfa concentrate necessary to lower the prothrombin time to normal. STEWART's observations[6] agree with those of other observers, but he has shown that blood-transfusion is an ineffectual means of lowering the prothrombin time and diminishing the bleeding tendency.

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[1] Quick, A J, Stanley-Brown, W, and Bancroft, F W, *Amer J med Sci* 1935, 190, 501

[2] Dam, H, *Biochem J* 1935, 29, 1273

[3] Klose, A A, Almquist, H J, and Mecchi, E, *J biol Ch* 1938, 125, 681

[4] Warner, E D, Brinkhous, K M, and Smith, H P, *Amer J Physiol* 1936, 114, 667, *Amer J med Sci* 1938, 196

[5] Butt, H R, Snell, A M, and Osterberg, A E, *Proc Ma Clin* 1938, 13, 753

The dosage recommended by various workers differs. BUTT and his colleagues use 400–1200 mg. of their alfalfa concentrate daily with 1–2 g. of bile salts as a prophylactic. No concentrate appears to be available yet in a commercial form, but it is to be hoped that these observations will encourage manufacturing chemists to market one.

THE MICROGLIA

MANY people, even among pathologists, still regard the minute histology of the brain as too intricate a subject for any but specialists, and any discussion that involves the mention of astrocytes, oligodendroglia and microglia is apt to be received by them with a polite indifference bordering at times on incredulity. This unfortunate attitude has doubtless arisen largely because our more detailed knowledge of these cells is almost entirely derived from the work of the Madrid school during the past twenty years, the relevant papers being published in Spanish journals little known in this country. Moreover the methods of demonstrating the minute structure of the brain need scrupulous care in their application.

The magnificent work of CAJAL, the founder of the Madrid school, began to make its mark on the rest of the world fifty years ago and was advantageously presented in the French translation of his treatise on the histology of the nervous system (1909–11). To HORTEGA, now working at Oxford, we owe the separation, in 1919 and later, of CAJAL's third element into oligodendroglia and microglia. This is of special interest to us because it was FORD ROBERTSON, of Edinburgh, who first clearly demonstrated these cells by his platinum method at the beginning of this century in a work that is too little remembered. ROBERTSON failed however to distinguish between microglia and oligodendroglia, these being collectively named "mesoglia" until analysed by HORTEGA. A great service has been done by WILDER PENFIELD in making the English speaking people more familiar with the recent Spanish work, but it is even better that we are able to publish on p. 1023 of this issue a lecture given in this country by HORTEGA himself. In this he reviews his work and teaching concerning the microglia. He is responsible for the view, for which there is overwhelming support, that these cells are of mesodermal origin and migrate into the central nervous system during its development from the pia and its invaginations, such as the velum interpositum. In the process the cell becomes altered from its primitive amœboid state to assume an increasingly complicated form until, in its resting phase, it looks remarkably like a twig of gorse. This elaboration of structure is a reversible process, and when stimulated by neighbouring inflammatory or degenerative processes the cell again becomes amœboid and migrates to the pathological focus to exercise its normal scavenging functions. Thus the microglial cell should properly be regarded as the neurological member of the reticulo endothelial system, and this view has gained wide though not yet universal acceptance.

The latest confirmation of HORTEGA's conception comes from KERSHMAN,[1] a pupil of PENFIELD's at Montreal, who in a masterly study of the first comprehensive series of human embryonic and fœtal material to be so investigated has mapped out the various sites at which the microglial cells make their entry into the nervous system. He shows that the process has already begun by the eighth week of intra-uterine life and he concludes, from an examination of the collection at the Carnegie Institute of Embryology, Baltimore, that migration begins with the vascularisation of the brain. Making due allowance for the highly specialised functions of the central nervous system and for its peculiar physical and chemical characters, there is much to be said for studying it histologically along the same lines as other organs.

STUDENTS AND MILITARY SERVICE

LAST week the House of Commons approved by 376 votes to 145 the Government's proposal to introduce a system of compulsory military training, and on p. 1079 are set out the chief provisions of the Military Training Bill as they will affect the student at universities and training colleges. The Minister of Labour may for good cause permit the anticipation or the postponement of the liability to be called up in a particular case, but at the time of writing no sign has been given that third year students as a group are to be allowed to take their degree (or the 2nd M.B. examination) before they enter military training. The choice of the age group 20–21 will cut into the careers of students so as to prejudice their future prospects more severely perhaps than those of any other men. Even the anticipation of disruption of studies, apart from the actual period of military training, is likely to disorganise academic life. While it is agreed that all sections of the community must share equally in providing trained men, the nation will gain if the sequence of calling up can be so arranged as to enable students near the end of their course to complete it. As for medical students already embarked on clinical training, we do not see how their course can justifiably be interrupted at all in the name of national necessity. It is already and rightly recognised that in time of war the student who has passed his anatomy and physiology would have to be kept on medical work because it would be of national importance that he should qualify. If, as Mr. Chamberlain says, we are forced to take special measures because we are no longer living in time of peace, it seems unreasonable to meet the present emergency by *removing* medical students from their work and delaying their qualification by at least six months.

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[6] Stewart, J. D., *Ann. Surg.* April, 1939, p. 538.

[1] Kershman, J., *Arch. Neurol. Psychiat.* January, 1939, p. 24.

ANNOTATIONS

SWIMMING AND OTITIS MEDIA

OPENING a discussion arranged by the Medical Officers of Schools Association on April 14, Mr T. B. Layton (who is an ex-president of the United Hospitals Swimming Club) dealt with the vexed question of swimming for patients with otitis media. He pointed out that a clean bathing-suit contained 500, and a bathing-suit in use 150,000, bacteria per square inch, and that most of these organisms came from the skin, fæces, and saliva of the wearer and were usually considered as non-pathogenic, such as *B subtilis*, *B. prodigiosus*, and *B fluorescens liquefaciens*. River and sea waters cleansed themselves by virtue of their high content of oxygen produced by weeds Even ponds in the centre of large towns did this with complete efficiency. It was only when the temperature of the water exceeded 70° F. that the percentage of oxygen diminished and trouble might arise. A great "bathing-load" might also impair the efficiency of the natural process of cleansing, which otherwise only failed in rivers running through mighty cities The self-cleaning power of the open sea was shown by the fact that at Whitstable both inshore and in mid-channel *Bact. coli* was absent in samples of 100 c cm of water, although near a watch-boat two miles out at sea it was present in samples of 50 c cm.

Turning to the question of the infecting organisms in disease of the mastoid antrum, Mr Layton said that for the last ten years he had made a practice of dropping into a tube of broth a piece of bone from every mastoid opened by him In acute disease the organism found was nearly always the hæmolytic streptococcus, whatever the clinical picture Occasionally the pneumococcus was found, and, more rarely, Friedländer's bacillus, *Bact coli*, and the *Vibrio septicus* One could therefore conclude that the hæmolytic streptococcus and the pneumococcus were the organisms concerned So far he knew of no record of the pneumococcus, and of only one record of the hæmolytic streptococcus, having been found in waters used for bathing. On the other hand he had found no evidence of infection of the middle ear by such organisms as polluted swimming-pools. Even bathing in the lower reaches of the Thames during very hot weather—i.e , under the worst possible conditions—according to thirty-nine years' experience at Guy's Hospital among patients from the south bank, had not been associated with otitis media In the few cases in which *Bact. coli* or the *Vibrio septicus* had been found there had been no suggestion that swimming had led to infection The organisms causing middle-ear disease did not live long in water, and those that polluted water were not responsible for such infection.

Many cases, however, had been attributed, by many doctors in different types of practice, to swimming and bathing. Some of these might be caused by the pushing up of water, and with it pathogenic organisms present in the nasopharynx, into the eustachian tubes owing to inefficient respiration during swimming Further, a doctor, asked by a parent about the desirability of a child's bathing, might be tempted to play for safety by forbidding it. He might just as reasonably forbid skating for fear that the performer might fall and injure himself Again, false reasoning might suggest that every case of otitis media in visitors to a watering-place was due to the bathing, although bacteriologically this was impossible Moreover, the peak of incidence of otitis media in schools was in the Lent term before the bathing-season opened. Towels were a more likely source than water, but Mr. Layton doubted whether even towels had anything to do with otitis media. It was more probable that the overloading of dressing-accommodation, by increasing droplet infection, was responsible.

Usually the hæmolytic streptococcus disappeared from the middle ear by the eighth week after perforation of the drum, and the bacteriology of the chronic ear was the same as that of the skin and of polluted water. Three clinical stages had to be considered. First came the ear that was on the border of becoming chronic (sixth to tenth week after perforation). The organisms of the skin needed moisture in which to grow, and, if the meatus were wetted, there was a greater risk of infection of the ear from the skin. For fear that water might enter the ear, Mr Layton would not allow a patient to bathe at this stage The second stage was that of active chronic otitis media He could see no reason for stopping such a patient from bathing for fear of polluting the water, for the organisms were the same as those already contaminating the water. If the purification, natural or artificial, of the water were efficient, they could do no harm If it were not, the additional amount of pollution was infinitesimal compared with that caused by the skins, secretions, and excretions of other bathers Bathing did not harm such patients; indeed, swimming helped them The third stage was that of the healed disease with persistent perforation of the drum. The alleged harm done to these patients by bathing (which he did not admit) was infinitesimal compared with the mental damage inflicted by the prohibition of bathing, thus making a distinction between the patient and other children

CARDIOVASCULAR CHANGES IN MYXŒDEMA

THE discovery that the heart sometimes shows gross changes in myxœdema is comparatively new, but in the last few years knowledge of the cardiovascular effects of thyroid deficiency has extended considerably, chiefly because radiography has become a routine and because there have been opportunities for studying the myxœdema produced by total thyroidectomy. Although congestive heart-failure has in the past been reported frequently in association with myxœdema and has been found to react favourably to thyroid extract, more recent observations suggest that in uncomplicated myxœdema gross heart-failure is unusual This fits in with the observation that therapeutic myxœdema tends to lessen the symptoms of cardiac failure in organic heart disease, and that failure is sometimes precipitated in spontaneous myxœdema by thyroid extract. In a clinical study Savy, Froment, and Jeune[1] note a remarkable absence of cardiac symptoms, even when the heart is considerably enlarged Anæmia and increase in weight are usually sufficient to account for the effort dyspnœa that may be present. With an impalpable apex-beat, absence of murmurs, and a slow regular rhythm, there is little to call attention to the heart clinically, but on radiography, which is indispensable in this condition, gross changes may be discovered. The most characteristic of them is a general increase in the heart shadow, and thus with the *feeble con* tractions simulates the appearance of pericardial effusion Under thyroid extract the heart can be seen to shrink back to more or less normal size, but digitalis is without effect Not all cases show striking enlargement of the heart, and in some the fact of enlargement is proved only by the specific action of thyroid extract in causing a reduction The difficulty in establishing slight changes in heart size is recognised by Savy and his co workers, and they appear to have eliminated the common sources of error They recognise two ways in which angina of effort, which is not rare as a complication of myxœdema, may react to the specific treatment Most often the pain is aggravated, sometimes even with minimal doses Less commonly, as in the case reported by Dr Beaumont and Dr Robertson in our issue of March 25, the pain is abolished The need for caution in the treatment of any case complicated by angina is emphasised, because of the probability that the attacks will be aggravated, and a number of cases of cardiac infarction are reported, in the presence of which it is held that thyroid is especially dangerous Hypertension, though found in only a quarter of the cases, was sometimes abolished by treatment, but a previously normal arterial tension may be raised, or hypertension be aggravated, with the result that treatment has to be discontinued The electrocardiogram shows changes which are well known, the voltage of all waves, especially T, being reduced Conduction defects have also been reported, which (like the low-voltage waves) are corrected by treatment with thyroid extract Myxœdema appears at a time of life when degenerative cardiovascular disease is likely to complicate the picture, and if the effects of the two conditions are clearly distinguished, myxœdema will probably be found to disturb cardiac function less than has been thought

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[1] Savy, P , Froment, R., and Jeune, M., *Ann Méd.* February, 1939, p 81

MILK BORNE SCARLET FEVER

In describing a recent outbreak of scarlet fever in Denmark Juel Henningsen and Ernst[1] paint a picture as vivid as that which H H Scott provides in "Some Notable Epidemics ' If the plot of all these stories is more or less the same, the detective work entailed is always interesting The Danish outbreak began on April 13, 1937, with the notification of about 20 cases of scarlet fever in Vejle, a community of about 25,000 people On April 14 the outbreak culminated with the notification of about 40 cases As most of the patients had been supplied with milk from the same dairy its owner was questioned, and he was able at once to state which was the milk cart and which were the farms providing milk for the part of the town where infection had broken out Medical inspection of the farms led to the discovery of a hitherto undiagnosed case of scarlet fever in a milkmaid whose hands were peeling, and one of whose ears was discharging pus She was at once admitted to hospital and all the dairy s milk was pasteurised The prompt elimination of the milkmaid as a source of infection was doubtless the reason why the outbreak ceased as abruptly as it had begun The bacteriological examination revealed Lancefield's group A and Griffith s type 3 *Streptococcus pyogenes* in the pus from the milkmaid and in 108 of the 118 cases of scarlet fever As in most such outbreaks the infection of the milk is maintained by mastitis in one or more cows, diligent search was made for disease of the udders in those that had supplied the offending milk But though every cow was examined twice at an interval of six days, and the aid of the State Veterinary Serum Laboratory and of the State Serum Institute was invoked, neither the cows nor their milk proved to be infected The milkmaid therefore seems to have been alone responsible for this outbreak, and it is remarkable that though raw milk is a poor culture medium for the germ in question, and the cows did not cooperate in spreading the infection, she still succeeded in giving scarlet fever to 118 persons and angina faucium to about 50 others

THE ROYAL ACADEMY, 1939

A PAINTING that was outstanding in the exhibition of the Medical Art Society last October has received the honour of being hung in the principal gallery at this year's Royal Academy It is Alexander C Dalzell's "The Aude Valley" (186), with its remarkable sense of land formation In this sense it is almost a scientific study, yet it holds its own with its neighbours as a landscape painting of real originality The painting commonly acclaimed as the picture of the year, "The Nativity" (215), a tempera by Miss Louisa Hodgson, is a very ordinary hospital scene of a mother with her baby, the doctor and father standing by, but the painting is heightened in meaning by the treatment, in manner and subject The people have a kind of skinny solemnity, and the working men in prayer are almost too obviously shepherds in modern dress A number of portraits, always the main standby of the Academy, have medical and scientific interest The white stone bust of the first Lord Moynihan of Leeds (1203) by Sir W Reid Dick is a notable likeness Miss Flora Lion s large portrait of Lady Dawson of Penn (562), in a mauve dress, although not comfortably composed is gracious The presentation portrait by Edward Halliday of Prof W E S Turner (650), seen in his laboratory but wearing academic robes, is a model of what a portrait of a scientist should be, the wall charts and apparatus enlarging and not swamping the character interest Finally it should be said that the architectural room at this year s Academy contains excellent illustrations of the many fine hospitals recently built in this country or contemplated, including the new St George's Hospital, the new outpatient block of the Royal Northern Hospital, and the Wingfield Morris Orthopædic Hospital, Oxford There is a spacious impression of the Birmingham Hospitals Centre (now the Queen Elizabeth Hospital), and a model of the Medical Research Building, Mill Hill

METHÆMOGLOBINÆMIA AFTER SULPHANILAMIDE

SINCE the introduction of sulphanilamide into therapeutics cyanosis has been recognised as a not uncommon complication of its use The cyanosis was at first attributed solely to the presence of methæmoglobin, sulphæmoglobin, or both pigments, and in many cases of cyanosis absorption bands due to these pigments can readily be detected by spectroscopic examination of the blood, and the quantity present can be estimated as the difference between total hæmoglobin and oxygen capacity In one case Bensley and Ross[1] found over 25 per cent of the hæmoglobin in the form of methæmoglobin The smallest quantity they were able to detect with a hand spectroscope was about 0 4 g methæmoglobin per 100 c cm blood Many cases of cyanosis are however met with in which abnormal pigments cannot be found on spectroscopic examination, and Marshall and Walzl[2] and Chesley[3] have shown, by comparing the oxygen or carbon-monoxide capacity of the blood with the hæmoglobin content calculated from the blood-iron, that in these cases all the hæmoglobin is present in available form and the cause of the cyanosis must be sought elsewhere, perhaps in the form of coloured oxidation products of the drug itself. It is clear from the literature that the incidence of cyanosis and of sulphæmoglobinæmia and/or methæmoglobinæmia varies much from clinic to clinic, and while traces of methæmoglobin in a person with a reasonable hæmoglobin level are of no importance, in a person who is already anæmic the inactivation of 30 per cent or more of the total hæmoglobin may be serious It is therefore of great importance that a way has been found of rapidly abolishing the methæmoglobinæmia due to these drugs

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[1] Juel Henningsen, E , and Ernst, J., *Ugeskr Laeg* March 9, 1939 p -93

[1] Bensley F H , and Ross, J B *Canad med Ass J* 1937, 37, 62

Following a suggestion made by Wendel,[4] whose results have now been published in full, Hartmann, Perley, and Barnett[5] have found that methylene-blue is an effective antidote Both sets of workers found methæmoglobinæmia in the great majority of patients receiving 0·1 g sulphanilamide per kg of body-weight per day, and significantly high levels of methæmoglobin in a large number. The degree of methæmoglobinæmia was not proportional to the blood-sulphanilamide level. By the administration of methylene-blue intravenously, in doses of 1–1·5 mg. per kg. of body-weight in a 1 per cent solution, the methæmoglobin and cyanosis disappear dramatically in the course of 30–45 min, whereas without methylene-blue they may take a day or two to disappear after sulphanilamide is stopped. The methylene-blue is equally effective if taken by mouth in four-hourly doses with the sulphanilamide, the dose suggested being 65–130 mg. (gr. 1–2), and there is no evidence that this interferes with the action of the sulphanilamide Methylene-blue produces no major toxic effects, though when given by mouth it sometimes causes vomiting and diarrhœa, and special care should be taken when giving the drug intravenously, because extravasation is painful and may lead to necrosis of the tissues round the vein. It is not suggested that methylene-blue should be given as a routine with sulphanilamide, but in a seriously ill patient who develops cyanosis it will allow sulphanilamide to be continued without risk.

SUBCUTANEOUS IMPLANTATION OF DESOXYCORTICOSTERONE

Since Deanesly and Parkes[6] first showed that hormones can be administered by implanting tablets under the skin the method has been used clinically for giving œstrone, testosterone and progesterone The technique is simple: the tablets are sterilised in an autoclave at 100° C., or even more simply in a test-tube of boiling water, and are then inserted in the subcutaneous fat under local anæsthesia. In man their action does not seem to last longer than three months by which time the tablets so far given are completely absorbed; but a more prolonged effect might be obtained by using larger ones From the sex hormones proper this method of therapy has been extended to desoxycorticosterone acetate, and Thorn, Engel and Eisenberg[7] report that subcutaneous insertion of two tablets of approximately 100 mg. each will maintain adrenalectomised dogs in good health for four or more months Their studies were controlled by investigations of mineral metabolism and it is noted that normal serum values and a positive balance for sodium and chlorine were maintained The weights of tablets removed at intervals suggested that 1 mg of desoxycorticosterone acetate was utilised per day, whereas 1·5 mg. was the dose necessary to get a similar effect from daily injections In this country Levy Simpson[8] has already reported the successful use of implanted tablets in Addison's disease, having inserted four tablets of 50 mg. desoxycorticosterone acetate (total 200 mg) in each of four patients In an additional note[9] he says that, as with other hormones, the effect lasts about three months As the rate of absorption depends on physical laws and not upon physiological demands, extra effort or infection calls for additional therapy The great advantage of the method is the obviating of injections, but this can also be attained by inunction, for Levy Simpson finds that desoxycorticosterone acetate, like œstrone and testosterone, is effective when applied to the skin Inunction may therefore prove to be the method of choice, but at present the larger quantity needed for cutaneous absorption is an important consideration in view of the high cost of the drug

FUNCTIONAL DISORGANISATION OF THE KIDNEY

During the last few years our knowledge of renal physiology has been extended largely owing to the discovery, in inulin, of a substance which is excreted solely by glomerular filtration and is unaffected by the tubules By comparison of their clearances with that of inulin the substances excreted by the human kidney can be divided into three main classes: those, like inulin, which are filtered off by the glomeruli and subsequently untouched by the tubules, those, like creatinine, which are apparently excreted by tubular activity as well as by glomerular filtration, and those, like urea and sugar, which are filtered off by the glomeruli and reabsorbed to a greater or less extent by the tubules

The mechanism of glycosuria and the meaning of a threshold for glucose have been considerably elucidated by the demonstration by Shannon and Fisher[10] that the tubules are capable of reabsorbing glucose from the glomerular filtrate up to a certain maximum amount per unit time, whatever the level of the blood-sugar, only if the amount of glucose in the glomerular filtrate exceeds this maximum does glucose appear in appreciable quantity in the urine The fact that the glomerular filtration rate seems to be reasonably constant in a normal man explains the apparent stability of the renal threshold for glucose under ordinary circumstances On the other hand it has been realised for many years that in diabetic coma there may be very high blood sugar with practically no renal excretion of glucose A number of cases of diabetic coma have recently been studied by McCance and Widdowson[11] who show that this phenomenon is only one aspect of a wide derangement of renal function, in particular the relationship between the inulin clearance and the creatinine and urea clearances is quite different from the normal one and in some cases the level of chlorine in the blood is high while the urinary concentration is low On another page Dr Allott describes a number of patients suffering from various conditions, but not from renal disease, in whose blood sodium and chlorine were retained though these substances were almost completely absent from the urine, other electrolytes were dealt with normally It will be remembered that J G G Borst[12] observed a similar failure to excrete sodium and chlorine after hæmatemesis

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[2] Marshall, E K jun, and Walzl, E M, *Bull Johns Hopk Hosp* 1937, 61, 140

[3] Chesley, L C *J clin Invest* 1938, 17, 445

[4] Wendel, W B *Ibid* March, 1939, p 179

[5] Hartmann, A F, Perley, A M, and Barnett, H I, *Ibid*, 1938, 17, 699

[6] Deanesly, R, and Parkes, A S, *Proc roy Soc*, B, 1937, 24, 279

[7] Thorn, G W, Engel, L L, and Eisenberg, H, *Bull Johns Hopk Hosp* March, 1939, p 155

[8] Simpson, S L, see *Lancet*, 1938, 2, 1411

[9] Simpson, *Proc R Soc Med* April, 1939, p 689

[10] Shannon, J A, and Fisher, S, *Amer J. Physiol* 1938, 122, 765

[11] McCance, R. A, and Widdowson, E M, *J Physiol* 1939, 95, 36

The work of Shannon and Fisher suggests a possible explanation of the high threshold for sugar in diabetic coma If the glomerular filtration rate is cut down (and in fact, owing to low blood pressure, it is much less than normal in many cases) the absolute quantity of glucose in the glomerular filtrate per unit time may not be more than can be completely reabsorbed by the tubules, in this case, notwithstanding the high concentration of glucose in the filtrate, no sugar will be excreted although the blood sugar is above normal It has recently been shown[13] that a similar mechanism of glomerular filtration with tubular reabsorption up to a certain limit explains the excretion of ascorbic acid, but at present we do not know whether any similar mechanism plays a part in the excretion of electrolytes It will be recalled that with the isolated kidney a very hypotonic urine is secreted, and the concentration and total amount of chloride is greatly increased by addition of posterior pituitary extract to the perfusion fluid Possibly the explanation of the abnormal metabolism of sodium and chlorine in these patients may lie in some interference with the secretion of a pituitary or other hormone, rather than in a pure filtration reabsorption mechanism corresponding to that for glucose In the cases described by Allott, for example, the various central nervous lesions found may have disturbed in some way the secretion of a pituitary hormone, and have thus led indirectly to the abnormal electrolyte metabolism

CYCLOPROPANE

CYCLOPROPANE seems to be steadily increasing in favour as an anæsthetic, though its peculiar properties and the need for special apparatus if it is to be properly given are likely always to restrict its use It is a highly potent anæsthetic and one to which the ordinary criteria of the presence and depth of anæsthesia do not apply More work, both experimental and clinical has been done on its properties in America and Canada than in this country, and a useful summary of this is now available in a report of the council on pharmacy and chemistry of the American Medical Association[14] Experimentally cardiac irregularities have been shown to be common when cyclopropane is inhaled, but, as Seevers and Waters point out, almost every anæsthetic can be shown to produce such irregularities if its clinical use is subjected to electrocardiographic examination Cardiac arrhythmias and the like are of little import except when unusually high doses of the anæsthetic are being used Pharmacologically cyclopropane stands the test of experimental investigation well, no organ suffering tissue change or functional depression to an injurious degree when the gas is used within fairly wide limits of strength Most people lose consciousness if the inhaled vapour reaches 6 per cent, and it is not generally known that subanæsthetic concentrations—3–5 per cent—produce analgesia if continuously inhaled The great difference between cyclopropane and the other commonly used inhalation anæsthetics is that the former alone never acts as a respiratory stimulant This has the advantage of ensuring that respiratory movement will not be embarrassingly violent, and indeed the expert with this gas can sometimes abolish respiratory movement entirely to facilitate the surgeon's task However safe such a manœuvre may be as regards risk on the table, it may possibly lead to trouble later, and perhaps the most formidable objection to cyclopropane is the occasional occurrence of massive atelectasis after its use This sequel is attributed to the deficiency of inert gas in the pulmonary alveoli consequent on the high percentages of oxygen employed with cyclopropane, and the use of helium, an inert gas slowly absorbed from the lung, is therefore recommended in association with cyclopropane Until fairly recently cyclopropane was not easily obtained in this country, but this difficulty has now been removed

CEREBRAL DAMAGE FROM CAROTID LIGATURE

A REPORT of gross cerebral damage after ligature of the left external and internal carotid arteries for intractable epistaxis[1] serves to remind us how little precise knowledge we have of this catastrophe It is difficult to estimate the risk in a given case and although observation of the effect of temporary arrest may be the means of avoiding some immediate accidents, there still remain those of late onset which elude prediction or prevention Fetterman[1] and Pritchard discuss four mechanisms, anomalies of the collateral circulation, thrombosis and embolism, stimulation of the cervical sympathetic and stimulation of the carotid sinus In their case hemiplegia developed immediately after ligature but the patient survived for more than a year, post mortem no posterior communicating artery was found on the left side Thrombosis and embolism are held responsible for late accidents but they cannot always be demonstrated at autopsy There are several indications for carotid ligature and the risks of cerebral damage must vary accordingly In hæmorrhage it is not likely to be undertaken except as a last resort and the exsanguine state of the patient must increase the chance of cerebral damage When it is done for the removal of malignant tumours the actual ligature is but an incident in an extensive operation, which is apt to cause shock and to aggravate its effects In aneurysm—perhaps the commonest indication—it might be supposed that the obstruction already present would ensure an adequate collateral circulation In many cases it probably does, but, as Jefferson[2] has remarked, an intracranial aneurysm may have the opposite effect, although this is less probable with arteriovenous than with saccular arterial aneurysms Pilcher and Thuss[3] discussed the effect of aneurysm on the collateral circulation and rejected it as a safeguard on the basis of Pilz's figures which were, however, published 70 years ago, it was in 1868 that he reported 30 per cent of cerebral complications following ligature for aneurysm and similar conditions. In 1935 Matas[4] reported damage to the brain in 11 per cent. of 80 ligatures, but there do not seem to be any recent records of large series in which distinction is drawn between cases with and without previous obstructive lesions. It is desirable that the risk of carotid ligature should be examined in the light of modern experience and that the conclusions drawn from pre-Listerian surgery should be reconsidered Such an examination should take into account the indications for ligature and must discriminate between cases with and without obstruction, subdividing the former group according to the site, intra- or extra-cranial, of the obstruction.

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[12] See *Lancet* Feb 11 1939, p 339
[13] Ralli E P Friedman G J and Rubin S H, *J clin Invest* 1938 17, 765
[14] *J Amer med Ass* March 16 1939 p 1061

[1] Fetterman J L and Pritchard, W H *J Amer med Ass* April 8, 1939, p 1317
[2] Jefferson, G *Brit J Surg* 1938, 26 207
[3] Pilcher C, and Thuss, C *Arch Surg, Chicago* 1934 29 1024

OPERATING IN A RESPIRATOR

In the *British Medical Journal* last week Mr. J. S. Rowlands called attention to the possible difficulties of surgical operations during or after gas attacks This subject has been discussed in the continental medical press—for example, by von Fehr[5]—and it is suggested that the war-time surgeon should learn to carry out his duties in a gas-mask, just as the army telephonist or gunner or infantryman learns to do so Ideally of course it should never be necessary to operate in the presence of gas, for operating-theatres ought to be made gas-proof and splinter-proof; the conversion of Nissen huts to this purpose is described by Mitchiner and Cowell[6] If such theatres are not available, however, and the surgeon and his team find themselves exposed to gas it would of course be essential for the whole team to be protected The patient will already be safe, if he is having gas-and-oxygen anæsthesia, for his face is covered and any air given can easily be passed through the canister of a respirator. As for the surgeon and his assistants, there appears to be no insuperable obstacle to the use of respirators, apart from unfamiliarity. To complete the finer parts of a disarticulation at the cubometatarsal joint Mr Rowlands found himself compelled to discard the "mask," but we understand that an appendicectomy has been successfully completed by Colonel Cowell wearing a general-service respirator. Before starting he carefully applied Anti-dim to his glasses and to the eye-pieces of the respirator both within and without The haversack was hung over his back instead of in front, and the sterilised overall was tied loosely to allow of air-entry The respirator was donned before washing up, and was worn for the 45 minutes till the dressing was applied No difficulty was experienced in comfort, efficiency or visibility, and Colonel Cowell threaded his own needle The wearing of the civilian-duty type of respirator would, he thinks, be much more comfortable and easier for all concerned.

EPANUTIN AND THE GUMS

EPANUTIN, or sodium diphenyl hydantoinate, is now receiving a fairly extensive trial in the treatment of epilepsy. Some time must elapse before its value can be assessed, because, as with the barbiturates, patients tend to become tolerant of the drug, and suppression or drastic reduction of the fits for a few weeks may not be maintained. Moreover, as we pointed out in a previous annotation,[7] toxic manifestations appear in a certain proportion of cases, and the drug should only be given under close supervision. Kimball[8] of Cleveland has observed what seems to be a new and rather serious sign of epanutin intoxication. Of 119 patients receiving epanutin at the Detroit special school for epileptics he finds that no less than 68 show some degree of hyperplasia of the gums, 17 of them having what he regards as advanced hyperplasia, though only 4 have spongy and tender gums that bleed easily. The hyperplasia is more common among patients who have complained of other toxic symptoms such as unsteady gait or periodic weakness It usually comes on within a few weeks, and may be preceded by a transitory complaint of sore mouth and tender gums. The severity of the condition is thought to vary inversely with the amount of ascorbic acid in the blood, and yet the administration of ascorbic acid or of a diet high in vitamin C was not very effective either in raising the ascorbic acid in the blood or in reducing the hyperplasia. Kimball is so pleased, however, with the control of fits and the improvement in the mental and physical health of his patients that he does not think it justifiable to stop the epanutin on account of the gum trouble He has not noticed any other symptoms of vitamin C deficiency, such as joint pains, purpura or extreme weakness. If hyperplasia of this type is as common a result of epanutin administration as Kimball finds it, it is curious that it has not been observed before But many epileptics have a high resistance to impressions of pain or discomfort, and it is therefore important that everyone who prescribes epanutin should add hyperplasia of the gums and gingivitis to the other evidences of poisoning for which he must carefully watch.

DR. N. G HORNER, editor of the *British Medical Journal*, has been elected to the fellowship of the Royal College of Physicians of London under the rule permitting the election of non-members of the college who have distinguished themselves in any branch of the science or practice of medicine We greatly welcome the recognition of this distinction

The following have been appointed honorary consultant advisers on the organisation of hospitals in war-time in Scotland: Sir John Fraser (surgery); Prof. L S. P. Davidson (medicine); Prof. R. W. Johnstone (maternity services); and Dr. J. H. MacDonald (nervous disorders).

The Minister of Health announced on Friday that the provisional maternal-mortality figures for England and Wales showed a further reduction from 3 13 per 1000 births in 1937 to 2 97 in 1938, the lowest rate on record. The annual report of the Department of Health for Scotland shows a maternal mortality-rate of 4 9 per 1000 for 1938, compared with 4 8 in 1937 In Scotland the general death-rate for last year was 12 6 per 1000 population, the infant-mortality rate 70 per 1000 births, and the tuberculosis death-rate 69 per 100,000, all these figures being the lowest recorded

The UNIVERSITIES YEARBOOK for 1939 has just appeared This yearbook which first appeared in 1914 has gone on improving and has now reached a form in which little change is required from year to year. In this issue the introductory chapter to the universities of Australia has undergone extensive revision, and information is given about the new University of Travancore These are the only substantial additions, apart from the innumerable corrections of detail which make the book so valuable as a current work of reference. The price remains unchanged at 15*s*

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[4] Matas, R, *Ann Surg* 1935, 102, 923
[5] von Fehr, A, *Schweiz med Wschr* April 15, 1939, p 347
[6] Mitchiner, P H, and Cowell, E M, Medical Organisation and Surgical Practice in Air Raids, London, 1939
[7] *Lancet*, 1938 [illegible] 956
[8] S. Kimball, O. P, *J Amer med Ass* April 1, 1939, p 1244

SPECIAL ARTICLES

THE WIDER ASPECTS OF NUTRITION

A NATIONAL CONFERENCE

THE conference arranged in London last week by the British Medical Association was a mixture of the academic and the practical it covered the theory of nutrition in the individual and the practice of feeding the community There was general agreement that many people are not getting enough food, but the difficulty of assessing "dietetic" malnutrition in strictly medical terms was recognised Members of the conference did not altogether agree moreover, about the broad economic and political measures needed to defeat under nourishment In the session on British farming controversy turned on whether "protective" foods should be grown instead of "non protective" foods Discussion became more openly political over family allowances and extension of the social services

After SIR KAYE LE FLEMING had welcomed the delegates and Lord HORDER as chairman had expressed a hope that the conference would lay the keel for a long term food policy, SIR ARTHUR SALTER M P, gave an inaugural address in which he said one could not discuss nutrition without coming up against its economic and political aspects Among the poorest of Sir John Orr s income groups, about 4½ million people, the consumption of milk, including tinned milk, was, he said, equivalent to 1 8 pints per head per week compared with 5 5 pints in the wealthiest group He would put as the first objective of economic policy the securing of an absolute minimum for the major items in the cost of living, particularly food and rent at present milk was treated primarily as an important part of the incomes of farmers, and secondarily only as the most essential of foods He viewed the widespread subsidising of private enterprise as "a form of bastard socialism," and advocated reform of the whole system of control in the public interest As regards a war economy, since our current food stocks would suffice for periods ranging from an average of a few weeks to about three months, and the power of increasing home production was limited, he advocated the storage of food value equivalent to a year's supply of wheat, the total cost of which (about £5 million), was about 1 per cent of our annual defence expenditure

PHYSIOLOGISTS' VIEWS

Prof E P CATHCART, F R S, said that apart from food the essentials for perfect nutrition included adequate sleep, fresh air, exercise and contentment of mind uncertain wages might affect the last factor Malnutrition might result from overeating there was no reliable objective measure of the state of nutrition The "biological value" of proteins was not a constant value but varies with the amount of protein in the diet—thus liver protein at a level of 8 per cent in the diet has a biological value of 77, whereas at a level of 16 per cent its biological value drops to 58 As evidence that a supplementary action can also come into play he said that if beef protein with a biological value of 69 is combined with flour proteins with a biological value of 35, in the proportion of 1 to 2, the combination possesses a biological value of 73—a value higher than that of beef itself This supported the argument for a good mixed diet Terroine, although he admitted that *proteins of animal origin (meat, viscera, milk and eggs)* take precedence over those of vegetable origin (legumes and cereals), considered that the inclusion of such "first class" proteins, although useful, is not essential Prof Cathcart considered that a diet made up of brown bread, butter, cheese, milk, vegetables and fruit would provide all the essential items The slogan "Drink more Milk," however, ought to read "Drink more Safe Milk" pasteurisation did not reduce materially the food value of milk

SIR ROBERT MCCARRISON, held that while there might be disagreement on points of detail concerning nutrition there was no cause for controversy on the "simple truths" which might be constituted in the following three principles —

(1) Nutrition is a fundamental *function of* the body on the efficiency of which health depends

(2) Food is the paramount influence in determining man's general physical endowment, powers of endurance and resistance to disease

(3) A well constituted diet made up of fresh natural foodstuffs contains all things needful for normal nutrition, so far as food is capable of supplying them, always provided that those derived from *agriculture are produced in unimpoverished soil*

He contended that if foodstuffs are fresh, natural and of a proper kind, a healthy appetite would take care of the quantities required to satisfy physiological needs—including both the known essentials and those we do not know Sir Robert defined nutrition as the sum of the processes—respiration, mastication, digestion, absorption, circulation, assimilation and *excretion—concerned in the growth, maintenance,* and repair of the living body as a whole or of its constituent parts The efficiency of the function of nutrition depended on the efficiency of all the processes or actions by which fitness is maintained, factors additional to the above being food, sunlight, fresh air, water, exercise and rest, and avoidance of excesses, particularly in food and alcohol Lack of food produced what he would call the "dietetic" type of malnutrition Exercise was an essential part of nutrition, but the dietetic factor must not be neglected Adaptation to heat and cold, wind and rain, sun and soil, altitude and sea level, and changes in climate and diet was also an important factor in nutrition, which, if cultivated, stimulated all organic functions discipline of the body and obedience to natural laws must be observed Since "*fragmentation*" *of foodstuffs and their relation* to the structure and function of the body was not yet complete, it was necessary to adhere to the third of the principles enunciated, and he advocated an extension of the "Oslo breakfast," and the provision of an abundance of milk and vegetables

Dr G P CROWDEN described a calculation from which it appeared that the total supply (home and imported) of certain of the dearer foodstuffs—such as meat, fish, eggs, and butter—would exceed the total requirements of the population if the B M A dietaries were generally adopted The supply would however be insufficient in respect of flour, other cereals, cheese and vegetables other than potatoes, and extra milk for the children a third of the meat, three quarters of the flour and other cereals half the butter, four fifths of the cheese half the lard, half the vegetables other than potatoes, and three quarters of the sugar would still have to be imported failing increased home production Dr Crowden suggested that a return to the land by factory workers would be beneficial

Dr. G. C. M M'Gonigle said that the optimum quantities of food were not so clear as the minimum, but there was bound to be waste, and in "practical" dietetic work he therefore favoured a considerable addition to the minimum diet, as a "factor of safety." He thought the British working man's wife was not so inferior at cooking as some scientists assumed, and in fact there was no evidence that bad cooking destroys more nutritive value than good cooking. This was merely an assumption.

NUTRITION AND THE PUBLIC HEALTH

Prof V. H. Mottram, delivering the Sir Charles Hastings lecture, remarked that "the early Victorians didn't wait to construct their drainage system until the science of bacteriology was founded, and there was no need for us to wait until the dietitians knew the last word." A working rule was to incorporate calories, proteins, inorganic elements and vitamins in the British diet and then rely on appetite There was evidence of poverty since according to Sir John Orr's investigation many spent less than 4*s* per week on food, although the cheapest imaginable daily diet (5 oz cheese, 2 3/5 lb brown bread, 1*d* cabbage and a teaspoonful of cod-liver oil) cost over 4*s*. per week In any rationing scheme bread, which gives the "elasticity" of our calorie intake, must be excepted. He mentioned the observation by R A. McCance that in throwing away the water after boiling cabbage the loss of calcium on 100 g. cabbage was only 3 mg., and if boiled in London tap-water there was actually a gain in calcium content. Probably the only nutritional loss in canned food concerned vitamin B_1; about half the vitamin C was retained.

AGRICULTURE

Ways in which production might be stimulated were described in two sessions, one on Home Agriculture, the other on Overseas Producers

At the first session, with Sir John Russell, F R S, in the chair, a paper was read by Lord Astor in which, after describing lack of purchasing power as the fundamental cause of malnutrition, he advocated the redirection of government subsidies in favour of "protective" foods (milk, eggs, vegetables, fruit, potatoes) instead of the "non-protective" foods grown chiefly in the eastern counties Owing to rearmament the amount of money available for agriculture was limited, and he thought it would be more economically spent in this direction, and that the importation of wheat, sugar, bacon, butter and cheese should be encouraged At present the home output of wheat was less than 3 per cent. of that consumed, and that of sugar only slightly over 2 per cent , whereas home dairying and livestock satisfied 70 per cent. of the demand and egg production had increased by some 200 per cent since 1913.

Mr K. A H. Murray, Ph.D , showed how the home supply of protective foods has been increased by reducing labour costs (by mechanisation and by taking land out of cultivation) and by better yields from livestock, the principle being to increase the output at the same wage expenditure or to reduce the wage bill while maintaining the same output. He thought that a further increase in output might be achieved by increased technical efficiency; but until this was reached he considered that a subsidy should be granted.

Prof W C Miller stated that there are now 5000 herds free from tuberculosis, and that the efficiency of an attested herd as a milk-producing unit is increased by about 25 per cent. He regretted the control of food inspection by persons unqualified in animal disease.

In the discussion Mr. Cleveland Fyfe, who spoke for "130,000 practical working farmers," maintained that Lord Astor's policy was not supported by them.

Mr. Montague Fordham estimated that Lord Astor's scheme would result in the unemployment of 250,000 workers in agriculture and industry, costing indirectly £75 million.

In the session devoted to overseas producers, Lord Bledisloe took the chair. Mr. F. L McDougall explained that while six dominions, occupying 14 per cent of the world land with a total population of 1·5 per cent. of the world total, had a production capacity beyond their needs, they were unable to find adequate export markets because international agreements put the interests of the producer before those of the consumer.

FOOD AND WAGES

In a session devoted to methods of stimulating consumption, with Lord Snell in the chair, the case turned on family allowances or extended social services

Mr. L. S. Amery, M.P., wanted family allowances, which inter alia would check the decline of the birth rate, which tended to "more bath-chairs to pull and fewer people to pull them"—Mr. L J. Cadbury described the working of a family-allowance scheme at Bournville The wage-rate of 56*s*. to 96*s*. per week was higher than that in many industries, but the family allowance was spent predominantly on food, to a proportionately greater extent in the lower wage-groups He thought that family allowances might be a partial solution to the falling birth-rate—Sir Kenneth Lee described the family-allowance scheme operated by his company.

Mr George Gibson favoured an extension of the social services; he disagreed with earlier speakers that the French trade-unions were in favour of allowances; the depressive effect on wage levels had reduced the effect intended He pointed out that the birth-rate was higher in areas where unemployment was rife, and said that in Germany the population had increased because marriage was encouraged by a loan, which was held to be paid off when children were born.

Dr Stella Churchill wanted to see social services available to people who would not get the allowances —i e, the unemployed, who, with their dependants, constituted 5–6 million necessitous cases She spoke of the necessity of meals for children, not forgetting the holidays Milk, she said, should be available for expectant mothers from the first month of pregnancy, and for toddlers from 2–5 years, who often got no extra nutrition; nursery schools were also urgently needed. With the consent of Lady (Rhys) Williams, Dr. Churchill described an experiment in the feeding of expectant mothers conducted over 4–5 years: 8770 mothers attending clinics were each given 6 lb. dried milk, 3 lb Ovaltine and 1½ lb Marmite for use throughout pregnancy (a comparable number of mothers served as controls) Figures collected from the investigation (to be published in June) strongly suggested that it might be possible along these lines to reduce the infant and maternal mortality-rates.

Dr A J B. Griffin observed that the wage-rates in Mr Cadbury's investigation were exceptional He considered that industry could pay, that the family allowance was "another subsidy for bad wages," and that men should be encouraged to stand on their own feet He thought it unnecessary to agitate against a low birth rate while there were 2 million unemployed —Mr AMERY disagreed with those who attacked family allowances, he thought that reforms in the direction of social services really meant "Jam yesterday, jam tomorrow, but not jam today"

SCHOOLS

In the final session of the conference, Sir CYRIL NORWOOD took the chair

Mr W O LESTER SMITH advocated the closest possible contact between the school medical officer and the education service to ensure the pre eminence of the claims of nutrition —Prof V H MOTTRAM wanted to see trained dietitians at the service of the maternal, child, and industrial welfare centres and thought that district nurses and sanitary inspectors should be familiar with the science —Mrs HENRY HALDANE considered that dietary change could be achieved only by a careful approach She would undertake "simply by telling the story of scurvy to send a village audience away more convinced of the reality of deficiency disease and the need of fresh food than by recounting whole alphabets of vitamins" Likewise lectures entitled Growing and Keeping Your Teeth or How to Avoid Anæmia by Diet would be accepted more readily by a women s institute audience than a lecture on Food Values —Mr G CHIPPERFIELD described how at camp many children "wouldn't touch milk pudding" and "didn't know how to tackle an egg," but they had usually acquired the habit before leaving —Sir ALBERT HOWARD said that experimentally it had been found that school children who were fed on properly grown vegetables ate 10 per cent less than if the food was grown in ground fertilised with artificial manure, or was kept in cold storage colds and measles did not spread among them, resistance being greater Likewise animals properly fed ate less and yielded meat of better quality

At the end of the conference the following resolution was passed without dissent —

This conference, called by the British Medical Association and composed of representatives of medicine agriculture at home and overseas, *industry and* education, is deeply *impressed with the importance of* nutrition to the national welfare It urges upon the Government the formulation of a long term food policy in which the requirements of health, agriculture and industry shall be considered in mutual relation It is convinced that measures to secure the more ready availability to all sections of the community of foodstuffs which are held to be desirable on nutritional grounds should be accompanied by an educational campaign to encourage their increased consumption

"Even those who have been most pessimistic about the boasted progress of our century must have been surprised by one recent development—the rapidly increasing callousness and cruelty of a large part of the world that claims to be civilized It is noticeable in the mild deprecation with which we receive the appalling reports of the mutilation and slaughter of children by motor traffic—reports running into tens and scores of thousands It is noticeable in large sections of contemporary art and literature in which one of the most laudatory adjectives is 'brutal' The brutalities are of the machine When the individual is most completely lost the callousness, sometimes almost unconscious for it is often the mere by product of a false idealism is most evident —ALFRED NOYES, reported in the *Times*, April 29, 1939

PARIS

(FROM OUR OWN CORRESPONDENT)

APPENDICITIS AND SEROTHERAPY

Dr M Weinberg of the Pasteur Institute, in a communication to the Academy of Medicine in February, commended the use of the antigangrene serum (which he introduced during the war of 1914–18) in *all* cases of appendicitis, especially those in which "material or moral" circumstances stood in the way of operation His surgical colleagues have reacted to the suggestion with a certain emphasis, regarding the moment inopportune for such paradoxical counsel when practitioners are just beginning to understand that appendicitis brooks no delay and when the policy of immediate operation is leading to an improvement each year in the case mortality Surgeons, it seems, are unable to picture the material or moral circumstances which forbid operation except in the case of a traveller in the Sahara or other remote spot—where he would in fact be as little likely to find the serum as to find a surgeon In the surgical view nothing should encourage the practitioner or the patient to believe that there is a medical treatment of appendicitis The only result of this would be an increase in the late operations with all the well known disastrous results Prof H Vincent, who introduced the antityphoid vaccination in the army, now in general use throughout France, spoke at the March meeting of the academy on the successful use in appendicitis of his own serum against *B coli*, but he offered it only as a help to the surgeon in toxic or gangrenous forms of appendicitis

THE FRIEDMANN VACCINE

There has long been bitter controversy over the use of this vaccine against tuberculosis The starting point was a claim made by tuberculous war pensioners to be treated free of cost with the Friedmann cure as they were entitled to be by orthodox methods They had been told by similar German groups of the good results obtained there Prof Friedmann, who is now living in exile, has resumed his scientific work at Monte Carlo For several years during which it was in abeyance imitations of his product were launched under his name with results that brought discredit on the method The genuine vaccine now being produced has found new advocates and controversy has been renewed There has been of late in France a wide extension of sanatorium treatment and the old veterans and the newer civilian patients have secured the ear of deputies specially interested in social welfare This has led to the appointment by M Marc Rucart, minister of health but not himself a doctor, of a committee to organise a thorough investigation This will not be on human material but on bovines, in a research laboratory of the official school of veterinary medicine at Alfort near Paris The economic loss on bovine tuberculosis is itself sufficient reason for the investigation The Minister proposes to investigate only the genuine vaccine controlled by Friedmann himself

THE IRON LUNG IN FRENCH HOSPITALS

France, which up to now has not had the privilege *of a Lord Nuffield to provide its hospitals with iron* lungs, may solve the problem in another way A broadcast appeal has brought in a sum of 600 000 francs and a committee has been appointed by the Minister of Public Health to ascertain the most suitable type of respirator among those at present in use From this beginning it seems probable that in a short time all the larger hospital centres in France and North Africa will have an iron lung which is most likely to be wooden Those who read Dr. C. L G. Pratt's letter in your issue of Jan. 28 will recall that the first mechanical respirator was devised by a French clinician, Dr. Woillez, who described a form of congestion of the lung which now goes by his name Dr. Woillez demonstrated his apparatus in 1876 at the Academy of Medicine, in whose bulletin were published the two engraved plates which you reproduced with Dr Pratt's letter. The pump was worked by hand, a feature that might well prove useful should electric power be put out of action, for instance during an air-raid.

Prof. Laignel-Lavastine of the International Neo-Hippocratic Society has sent to leading medical men in various countries a letter asking for support for the second congress to be held in France towards the end of the present year Neo-hippocratism, since the idea was launched some years ago from London by Cawadias, has found acceptance in medical circles here, official and non-official, as a meeting-ground for homœopathic and allopathic doctors.

A physician acting as social insurance controller lost his own self-control enough to tell a patient in a loud voice what he thought of the surgeon who had treated him. The surgeon, who has a high standing in Paris, having heard of what had happened, sued the controller for slander and was awarded 1000 francs in damages. The fine will be paid by the *caisse,* regarded as responsible in civil law.

The French Society for Serology, founded in 1931, has extended its activities and its title to chemotherapy. At a special meeting held in Paris the guests of honour were Dr. P. R Peacock (Glasgow) and Prof Maisin (Louvain) who delivered lectures respectively on serology and the diagnosis of cancer.

Prof. Pachon, one of the leading French physiologists, has died in retirement. His life work was principally on blood-pressure and the instrument for its measurement, the *oscillomètre Pachon,* is still in use with slight modification in most Latin countries. He spent his life in laboratory work and in teaching, and was the perfect type of *savant* eager only for the discovery of truth behind the complexity of natural phenomena.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

THE DOCTOR AND THE SOCIOLOGIST

AT a meeting on health insurance convened by the American Association for Social Security on April 14 and 15 the views of the American Medical Association were presented by Dr. Morris Fishbein, editor of its journal If the indigent in the United States are not getting medical care in every case, he said, it is because the social-welfare profession have failed miserably in bringing the sick to the sources of such care However, the indigent in this country are better cared for than in any country in the world Health insurance, in Dr. Fishbein's opinion, exalts administration above service. It results in a low grade of practice and if introduced under the Wagner bill would put medical care under political control.

Miss Helen Hall, president of the National Federation of [illegible]ents, spoke in favour of health insurance and especially of the British health-insurance administration. She paid a tribute to the friendly attitudes of the British working classes to those who had come over to inquire regarding their experiences under health insurance. "Lor, miss," they had said to her, "Ain't your accent funny! We thought it was just made up for the movies!" She hoped that any scheme for health insurance introduced in the United States would provide for the entire family

Dr. Hugh Cabot put "the case of the progressive doctor" He agreed with Dr. Fishbein that no one wants complete security; but we do want a little less insecurity. In spite of good public-health statistics in this country, it is undeniable that large groups of people get nothing that can be called adequate medical care Dr Cabot then eulogised the standards of scientific medical journalism in this country. But medicine, he remarked, is not an abstraction It may not be surprising that physicians are unable to keep abreast of sociology and economics; yet these are fields in which his advice will be asked Excellent as are our medical publications in their own sphere, they are not so good in the sphere of economic and social problems Too frequently we have been treated to special pleading and to dogmatism by writers who are ignorant of fundamental facts; too often there has been descent to emotionalism Physicians find it difficult to realise that it is not possible to set up in social questions the type of experiment, with few variables and adequate control, to which they are accustomed in natural science. In sociology what we set up is a "trial," not an experiment, and crabwise we proceed by the old method of trial and error. The public recognises that physicians are experts in their own field and is willing to treat them as such; but the profession must not expect to be treated as expert in sociology and economics.

MEDICAL CARE IN THE COAL-FIELDS

A report on conditions of medical service and hospitalisation in the coal-mining areas of Southern West Virginia, Virginia, Eastern Kentucky, and Northern Tennessee has just been issued by the Bureau of Coöperative Medicine (5 East 57th Street, New York City) It is based on interviews with 787 miners and their wives, with 75 doctors and "30 or 40 other persons," and inspection of 38 hospitals. The report states that "the miners of these districts are receiving deplorable medical service from their camp doctors, are constantly opposed by them in any dispute with the companies, and at present have no means of forcing better standards. For these things they are paying regular fees of approximately $2,500,000 a year, plus another million in extra charges, of which a large proportion is diverted into the pockets of the companies and contract doctors who sublet the work."

The hospitals in this area are with almost no exceptions privately owned and run for profit by the doctors who work in them. They supply only about 2 5 beds per 1000 population and the men pay exorbitantly high rates for their support Since the hospitals are maintained by per-capita payments, each patient is a liability. It is reported that one unmarried man living alone was discharged while still in a solid plaster cast from his armpits to his left ankle. There is a serious lack of trained nurses. The equipment, though fairly good for emergency surgery, is wretched in other respects Medical records are so poor as to be of little assistance either in future sicknesses or in compensation hearings.

The miners are severely handicapped in obtaining medical and cash benefits to which they are entitled under the Workmen's Compensation Acts, because of the widespread company domination of doctors and hospitals The bureau recommends the formation of voluntary non profit group health associations

VIENNA

(FROM OUR OWN CORRESPONDENT)

ERNST FINGER

Prof Ernst Finger, formerly chief of the Vienna clinic for dermatology and syphilis, has died at the age of 83 He was educated at the universities of Prague and Vienna, and first held the post of chief assistant in the department for diseases of the skin at the Vienna General Hospital In 1904 he was appointed director of the clinic Under his guidance its fame grew, and students from all over the world were eager to attend his classes and to work under him His books on diseases of the skin and the sexual organs, which were translated into many languages including Chinese and Japanese, added to his reputation His chief interest was in the fight against venereal diseases, and in 1907 he organised a chain of centres for the treatment of gonorrhœa and syphilis throughout Austria, including a number of evening outpatient centres where men and women could obtain treatment without loss of working time A follow up department kept these patients under observation after they were cured It was on his advice also that leaflets of instruction were distributed among the working classes His work in the period during and immediately after the late war was especially valuable, for at that time the prevalence of venereal infection among the population was very high Finger was the prime mover in an effort that was made to introduce a bill to the Austrian Parliament making the notification of venereal diseases compulsory, but the attempt was unsuccessful In 1927 on reaching the retiring age he gave up his position at the clinic which has since been taken over by the University of Vienna Finger's kindly interest in his pupils in all parts of the world never flagged, and many will remember him gratefully as a research worker, a teacher, and sociologist

GOITRE IN AUSTRIA

A monograph on the prophylaxis of goitre by Prof Wagner-Jauregg, published by the Ministry of Health, contains a remarkable body of statistical data on the incidence of this condition in Austria In 1923-24 a systematic examination of all school children in the country was carried out, the results being entered on a special form similar to that used in Switzerland by Bayard The findings had to be entered by the school doctor under four headings (1) no goitre, (2) incipient goitre, (3) slight enlargement of the thyroid, and (4) well developed goitre Altogether 680,000 children between 6 and 14 years were reported on, of whom 44 per cent of boys and 49 per cent of girls had a goitre in various stages. The highest rate was found in the mountainous province of Vorarlberg-Tyrol, which showed an incidence of 50 per cent in boys and 63 per cent in girls, the lowest was in the low lying province of Burgenland, with an incidence of 16 per cent in boys and 20 per cent in girls The corresponding figures for Vienna were 41 and 16 per cent Prof Wagner Jauregg thought that these high figures represented an ephemeral wave of goitre, the legacy of the war and immediate post war years, when food and especially vitamins were scarce. This is borne out by the results of subsequent examinations, though these have not been conducted on such a large scale In 1931–32 the incidence of definite goitre had fallen in the worst regions to a tenth or less of what it was in 1921, and in 1937 the figures were even better In 1924 preventive measures were instituted by the health authorities Since then only iodised salt, as introduced by Grange in Geneva and Hunziker in Zurich in the 50's, has been sold to the public for ordinary use This *Vollsalz* contains 5 mg of potassium iodide in each kilogramme of salt, or 1 part in 200,000, and its effect seems to have been highly satisfactory. Prof Wagner Jauregg also discusses the relation to goitre of deaf-mutism and endemic cretinism, both of which are relatively common in the mountainous districts In cretinism iodised salt is expected to act not so much on the cretins themselves as on their goitrous progenitors

MEDICINE AND THE LAW

High Court rejects Medical Certificate

In Rex *v* Boycott and others, ex parte Keasley, the High Court has quashed a medical certificate signed by two doctors which certified a boy to be an imbecile within the meaning of the Mental Deficiency Acts Stanley Keasley, 11 years old, attended the Harpenden council school for some years In 1937 the headmaster told his father that Stanley was to be medically examined The examination took place, and the father afterwards received a letter from the Harpenden local education subcommittee stating that the boy was to be examined with a view to his transfer to a special school The father strongly objected, he considered his son fit for ordinary elementary education, he had his son examined by his own doctor who reported him capable of being educated at the council school, this report was said to have been later confirmed by a specialist In October, 1938, the father was notified that a certificate had been signed to the effect that the boy was incapable of being educated at the council school and it was suggested that he should be sent to a special institution The father then moved the High Court for an order of certiorari to quash three documents—namely, (1) the certificate of Oct 5, 1938, signed by two doctors and purporting (under the Mental Deficiency (*Notification of Children*) *Regulations* of 1928) to declare Stanley Keasley to be an imbecile, (2) a report of the same date by the first of the two certifying doctors, and (3) a notification dated Oct 10, 1938, from the clerk to the education committee sent to the county council's Mental Deficiency Act committee, requesting the latter to consider the advisability of transferring the boy to the special institution The father's motion cited the Herts county council, the Harpenden education subcommittee, and the two doctors as respondents

It was possible to criticise the treatment of the boy's case in two respects First, in making it the duty of the local education authority to ascertain what children are defective and whether a child is incapable of receiving instruction in a particular school, section 31 of the Mental Deficiency Act of 1913 stipulates that any case of doubt must be determined by the Board of Education The father had asked that the matter be referred to the board but his request was refused. It is not clear whether the act is meant to give a right of appeal to every parent who claims that his child is perfectly normal —in other words, whether the doubt is a doubt entertained by the parent or a doubt entertained by the local authority. The facts of the present case, said Lord Hewart, showed that a doubt did arise and that the case should have been referred to the board But it was a second point which seemed to have had even more effect in inducing the court to quash the documents Apparently the second medical practitioner who signed the certificate had never seen the boy. The judges said that this was most unfortunate; the certificate was calculated, though not intended, to mislead any person reading it into the belief that it was in truth and in fact the certificate of two independent medical men, given after both had examined the boy. It is by no means clear that the certificate of one doctor would not have sufficed Section 31 applies an act of 1899 which requires certification by a duly qualified practitioner approved by the Board of Education. The 1899 act was repealed in 1921 and, so far as can be seen, the corresponding provisions in Part V of the 1921 act *do not* require *two doctors to certify*. The result seems to be that a certificate adequately signed by one doctor, and sufficient for its statutory purpose, was nullified by the addition of the signature of the second doctor who admittedly had not seen the boy. The High Court quashed the documents and presumably the matter will now be referred to the Board of Education. Meanwhile the boy, precluded by the certificate from continuing his education at the council school, has been at home receiving no education at all.

Certiorari is an ancient writ whereby the King's Bench Division examines the validity of some proceeding or decision in an inferior court Last year, by a statute designed to simplify the procedure, the writ of certiorari, as such, was abolished; but the general machinery of review remains; applicants now ask for an order instead of a writ From the beginning it was only proceedings of a judicial character which could thus be removed into the King's Bench Division by the process of certiorari and there questioned. Merely ministerial or administrative acts—e g, the issue of a warrant by a justice of the peace—are not so removable The respondents contended that the documents about Stanley Keasley were administrative acts. Some of them, indeed, must have been very near the line. The Lord Chief Justice ruled that the three documents must be regarded together as a single entity. He and his colleagues unanimously held that the certificate was created in such a way as to look like the decision of a quasi-judicial authority. An order for certiorari could therefore be justified. If the local authority, doing its best for the children entrusted to its care, finds that this litigation has merely delayed the sending of a child to an appropriate school in the spirit of the statutes governing these difficult cases, it must comfort itself with the reflection that the liberty of the subject has once more been vindicated.

Dentist's Successful Appeal

Critics of the Medical Acts occasionally complain of the absence of any right of appeal to a court of law against a decision of the General Medical Council to order the name of a medical practitioner to be erased from the Medical Register for "infamous cond[illegible] any professional respect" The Dentists Act gives a right of appeal against the removal of a dentist's name from the register or against refusal to register a name. On appeal the High Court may "give any such directions in the matter as they think proper" Last week the divisional court reversed an order of the General Medical Council and directed that a dentist's name be restored to the register. The dentist, Mr. S. M Buckley, had practised since 1906 in Oldham and is a justice of the peace for that borough It was stated on his behalf that, when in ill health in 1936, he made two mistakes in "dental letters" of patients sent by approved societies under the National Health Insurance Act. One of these cases resulted in a payment to him of £3 4*s* ; this sum he refunded when the mistake was pointed out. For those two slips in a career of 30 years, said his counsel, Mr. Buckley was adjudged guilty of infamous professional conduct and it was ordered that his name be erased On appeal Lord Hewart observed that Mr. Buckley had always taken the position that what he did was unintentional and that his errors and lack of diligence were due to his being harassed by illness. The Lord Chief Justice was anxious not to say a single word which might appear, even indirectly, to involve a reflection on the course taken by the council; he appreciated the care with which its proceedings were conducted Nevertheless, when he looked at the material now before the court, he was satisfied that there was not sufficient ground for the council's decision. Humphreys and Singleton, JJ, concurred.

There is perhaps a possibility of distinguishing the dentist from the medical practitioner in respect of the right of appeal to the High Court. Erasure of a dentist's name is a total bar to practice. No unregistered person can practise dentistry, just as, under the recent statute, no unregistered person can practise as an architect—though there is a saving for the naval architect, the landscape architect, and even the golf-course architect The architect whose name is taken off the register has the right to appeal to the High Court So also has the solicitor who is struck off the rolls by the Law Society, and the registered pharmacist who incurs a like sentence for professional indiscipline The veterinary surgeon can appeal to the Privy Council Alone the registered medical practitioner cannot appeal to any tribunal or authority. The judges will not reopen his case unless the hearing by the General Medical Council can be challenged for bias or corruption or for neglect of the principles of natural justice The council is the sole judge of all questions of fact at its disciplinary inquiries, the sole repository of the standards of proper professional conduct The council, as the Queen's Bench declared in 1863, is the tribunal to whom the legislature has left the decision as being the best judges in the matter

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Royal Medical Benevolent Fund—The annual general meeting of the fund was held on April 25 and the following honorary officials were re elected: president, Sir Thomas Barlow, F R.S., treasurer, Dr. Lewis Glover; and secretary, Mr. R. M. Handfield-Jones Dr. E. A. G. Dowling and Dr. F. C Martley were elected vice-presidents, and the retiring members of the committee of management were re-elected with the addition of Sir Humphry Rolleston and Mr Herbert Tilley.

During the past year the fund has helped 746 families, of which 627 were former beneficiaries who had their rewards renewed. In all £24,320 were distributed.

SOCIAL IMPLICATIONS OF MEDICAL DISCOVERIES

IN the Robert Rede lecture, delivered at Cambridge on April 28, Sir EDWARD MELLANBY contrasted the present insecurity against death by violence with the security against death by disease, showed how the latter was based on a rapid advance of medical knowledge, and called attention to some of the social and economic implications of that knowledge and the effects of lowered mortality rates, longer life, and improved standards of health and physique on national and international life. The lessened death-rate in early life, the rapid raising of the average age of the population, and the lengthening of life were, he said, accompanied by an increase in the fatal diseases of later life, such as heart disease and cancer. Other effects of medical discoveries were the increase in stature and a great decrease in bony deformities among young persons. It was true that many of the changes were produced by administrative actions of the government, but it was medical science that informed such actions. Other of the changes were due to personal action, such as the modern habit of cleanliness, derived from the knowledge of bacteria and infection. The scientist, however, had cause to complain of the great delay between discovery and public action which sometimes was caused by economic and social restrictions. For instance, diphtheria could be cleared out of England at once by preventive inoculation of infants and children with diphtheria toxoid, as had been done in Ontario. At Hamilton, with a population of 175,000, not one case of diphtheria had been diagnosed in the last five years. Another example was the difference (due mainly to varying standards of nutrition) in physique and mortality rate between the children of the poor and those of the well to do. It might be that economic and other considerations would prevent fuller advantage being taken of modern teachings on nutrition without much greater help from the government. Ultimately, perhaps, the state might guarantee the provision of a sufficiency of protective foods (milk, eggs, vegetables, and fruit) to all school children. This would be a profitable action, and the cost of provision of such food would probably be saved by the diminished cost of medical services and by the increased efficiency of the people.

EFFECTS ON HOSPITALS

On the one hand, advances in the diagnosis and treatment of disease had led to an increased demand for hospital accommodation. The development of radiology, bacteriology, pathology, biochemistry, hæmatology, surgical control of sepsis, and anæsthetics, together with their technical apparatus, had made it more and more impossible for the sick to obtain the best medical attention without entering some public institution, and the expenses of hospitals had increased enormously. On the other hand, increased knowledge of preventive medicine, by eliminating disease, rendered hospitals, doctors, and nurses less necessary. Discoveries in preventive medicine were not so dramatic as discoveries of cures; consequently the prevention of disease was never regarded as an urgent matter, and its adoption was therefore slow. Its action however, though slow, was sure and lasting, and there could be but little doubt that in the near future the reduction or elimination of disease by prevention would entirely alter the character of hospital practice and might greatly reduce the need for institutional treatment. Acute killing diseases of early and middle life could be expected to become less common and the chronic disabling diseases of old age commoner. The average age of patients in hospitals would probably increase, and, except for motor car accidents, hospitals would become places for alleviation of suffering and of comfort for the aged rather than places where dramatic cures were performed and the sick restored to health. From an economic standpoint, especially as regards civic and voluntary hospitals, it was only by encouraging medical research and rapidly making use of its discoveries in preventive medicine that the present tremendously costly system could be controlled.

EFFECTS ON MEDICAL PRACTICE

The effect of additional knowledge on medical practice would be to change its nature, more work being directed to protection against disease, especially the protection of young people against diphtheria, whooping cough, and measles, rather than to attending them when they were suffering from these diseases. The general practitioner's work, as at present carried out, might be greatly reduced—even seriously, from his point of view—in the near future. At first sight the future of the dental surgeon seemed even more precarious, in view of the knowledge already acquired of methods of building up sound teeth, gums, and jaws by proper nutrition; but it was equally certain that many parents would not carry out instructions in these methods. Improvement in the teeth might even increase the amount of dental work, because it would make the treatment of caries more worth while than it was at present, when a large part of the population was edentulous at thirty or forty.

The future of the public health services was also difficult to see. Except for provision of centres for the medical care of children aged 2–5 and schemes for providing and controlling supplies of milk and other protective foods to the poor, there did not seem at present to be much reason for great increase in these services. On the contrary, the need for some of the established services, such as fever hospitals, tuberculosis institutions, and centres for the treatment of venereal diseases, ought to be less in the near future. There did not appear to be much support for the view commonly expressed that there would be a great expansion of the public health services in the future, although it was probably true that this work would assume greater relative importance.

ADMINISTRATIVE ACTS

Any state scheme affecting health could only be as effective as medical knowledge at that time allowed it to be. However large and grandiose the scheme adopted, however costly, however well administered, the limiting factor for effectiveness must be scientific knowledge, a fact well illustrated by venereal diseases and by puerperal fever. This being so the success of the Cancer Act, which had recently been passed by Parliament, would depend on improvements in radiotherapy and on the opening up of new lines of attack, which could only be developed with more knowledge of the fundamental nature of cancer. The United States of America had recognised this fact and, instead of embarking on a state scheme for treating cancer, had set aside large funds for cancer research. Luckily we would be able to share in the fruits of their enterprise.

The whole position of state action in health matters

Sir Edward concluded, wanted clarifying. Sentiment and public appeal associated with particular lines of action should be eliminated, and each proposition should be considered only from the point of view of results to be expected in terms of saving life and giving increased efficiency.

PUBLIC HEALTH

The Evacuation Plans

NEARLY all the local authorities in the reception areas have now reported on their survey of housing accommodation available for refugees from the cities, and the results are regarded as very satisfactory. The Minister of Health suggests (Circular 1800, H.M. Stationery Office, 1d.) that receiving and evacuating authorities should now get into contact with one another, and with the education and transport authorities, and should make detailed plans. Operation of the scheme is not to create any additional burden on the local rates of receiving areas

A new memorandum on the evacuation scheme (Memo. Ev. 4, H M. Stationery Office, 3d.) states that the object is to transport from crowded areas about 3 million persons, including school-children, younger children with their mothers, expectant mothers, and blind persons and cripples. They are mainly to go to occupied houses, because otherwise accommodation for 2 or 3 million people cannot be arranged at short notice, but suggestions are made for the use of empty houses, and the erection of a number of camps is being stimulated Preparations for evacuation, transport, reception and arrangements for emergency rations and for allowances are discussed Local authorities are asked to consider the provision of any medical, nursing or first-aid staff that may be necessary for the journey They will not be responsible for transport, but the receiving authorities are asked to make arrangements at each detraining station for reception personnel; for sufficient sanitary and first-aid provision; for "rough accommodation," including bedding for the night, for train-loads which road transport may not be able to clear till the next day; for a meal and a supply of drinking-water; and for informing the responsible persons of the numbers to be taken to each setting-down point and of the time they are likely to arrive The survey shows that enough accommodation is likely to be provided on a voluntary basis; the suggested instructions to billeting officers have, however, been framed on the assumption that householders merely unwilling to receive children might be compelled to do so.

The memorandum contains notes on the reception and education of school-children, the provision of communal meals and the organisation of recreation The sanitary authority will be responsible for dealing with any outbreaks of infectious disease, but any additional cost of hospital services will not fall on the rates The local emergency committee for nursing should be informed of the number of nurses and nursing auxiliaries needed to supplement the existing district nursing staff. The question of the continuance of the school medical and dental service will be dealt with in a memorandum to be issued by the Board of Education If the influx of population requires, for medical treatment in the homes, reinforcement of the doctors in the area, the local emergency committee of the British Medical Association will arrange for the transfer of practitioners from other areas [illegible] arrangements for payment for medical services to evacuated school-children are under consideration. No liability will fall either on the householder or the receiving authority.

L.C.C. Hospitals and Medical Services

The hospitals and medical services committee of the L C.C. report that, during the last four years, nearly £2,000,000 has been spent on the improvement, modernisation and extension of the council's general and special hospitals

The estimates for the coming year include the sum of £700,000 for further improvements, including preliminary work in connexion with the construction of a new general hospital at Tooting, extensive additions to St. Nicholas' and St Pancras Hospitals and the construction of a new serum institute at Carshalton. Further schemes for modernising, extending and improving the hospitals will be put in hand during the year. At general hospitals there are to be new receiving wards and outpatient departments, additional maternity accommodation, nurses' accommodation and sanitary annexes Ward blocks are to be reconditioned, institutions are to be adapted for the use of sick persons and boiler plants and laundries are to be improved.

The net maintenance expenditure for hospitals and medical services for 1938–39 is estimated at £5,789,500 and for 1939–40 at £5,930,300 The provision in respect of staff for 1939–40 shows an increase of £213,000 (over that of £3,450,200 in 1938–39), about half of which is accounted for by the introduction of the 96-hour fortnight for the nursing staff The dental services, which formerly came under the education committee, have now been transferred to the hospital and medical services committee and this accounts for £40,000 of the increase. The consultant and specialist service will cost £4800 more; the total annual cost of this service is now £45,000

The accommodation at St Margaret's Hospital, Kentish Town, is to be increased from 81 to 90 beds and cots, in order to make room for a special vulvo vaginitis unit for the treatment of girls from Stamford House remand home, Shepherd's Bush, and the nursing and domestic staff is to be increased.

The committee recommend a grant of £250 towards the cost of the Prophit Tuberculosis Survey instituted by the Royal College of Physicians to ascertain the type of individual in the young adult population most likely to develop pulmonary tuberculosis This grant is recommended on the understanding that no report of the work of the survey shall be published without the council's approval.

First-aid Posts in London

The schemes submitted by 18 of the 28 metropolitan boroughs and approved by the Minister of Health provide for 131 fixed aid-posts, 5 cleansing stations and 34 mobile units The Minister has now issued a list of the addresses of the hospitals, child-welfare centres, dispensaries, schools, public baths and other buildings selected as fixed posts The recruitment of personnel for these posts is progressing rapidly. In addition to a doctor to be appointed by the local authority, each post requires on an average 60 auxiliary volunteer helpers As stated in this column on April 15 (p. 808) the estimated total of posts required for the county of London is 200, so that about 12,000 women auxiliaries will be required In all over 17,000 women have volunteered for this work, and of the 2600 men who will be required nearly 2300 have already been enrolled.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM AN AMATEUR JOURNALIST

I

THE journalist, so we are told, must have the capacity to interest people in everything For this enterprise, then, members of our profession should be well equipped We see life from every angle, our technical knowledge is of the stuff which is perpetually and universally interesting We have the material, but have we the art of presentation ?

Rarely, I think, for our training is antagonistic to certain essentials of journalism We cannot purchase sensation at the expense of correctness, we qualify when others might be dogmatic, we tend to be diffuse rather than concise, we are accustomed to work on a large canvas The journalist, in contrast, must aim at the dramatic rather than the scientific, he is not handicapped by our insistent hesitancy in respect to accuracy In his turn, he is not without his inconveniences; his space is very circumscribed, his work approximates to the miniature

* * *

A chance encounter with the editor of one of our dailies and admission of a *cacoëthes scribendi* resulted in the invitation to contribute something to his columns and he himself suggested the subject "Why does December depress you ?" In point of fact it had not struck me that there was depression in the air, but we do not encounter some fourteen years of examinations for nothing We learn that a question is there to be answered, though for our bricks we may have little enough clay let alone straw and I tackled the problem in the manner of the old campaigner I presumed, therefore, the existence of widespread depression and sought for explanations which, speciously enough, should be related to the climate, and the influence of darkness and of damp, on the physical side That was easy going, for everybody identifies these circumstances with infections, and illness and depression are correlated Want of exercise at this time of year was a contributory factor Then, a little daring, I brought in unemployment and the shadow of a general election and their effects on our spirits Psychology of course could not be omitted and after a reference to the possibility of rhythm in life and, therefore, of cycles of elation and depression, I reminded my readers of the existence of Mark Tapleys and Mrs Gummidges, winding up with the James Lange theory of the emotions and the little girl waggling the dog's tail to make him happy

Along came a brisk young lady whose mission it was to give me my first lesson in the art of journalism They liked my Dickensian references—the public is always pleased when its acquaintance with the classics is assumed—and the bit about the little girl and her doggie was just the thing But not much of the remainder had made an appeal to the sub-editor, my critical analysis had excited neither his admiration nor his enthusiasm Many of the words I used must be replaced by more homely synonyms, sentences had to be strictly curtailed, and the whole thing was at least 30 per cent too long

I was not proud of the ultimate production nor could I be expected to be pleased with it, reconciliation to the sacrifices was not easy But I felt bound to admit that there was much in this journalistic attitude, after all, you have to provide what is wanted, you cannot compel a public to like what you think it ought to like Moreover the experience is salutary to one whose natural style errs on the side of sesquipedalianism and perhaps wearisome over elaboration, compulsory compression is a valuable exercise But it is not easy Three guineas I received for that article, and when some time later I encountered my editor friend and informed him, perhaps in a desire for commiseration, that the article had taken me three hours in its preparation, its pruning, and its polishing, he assured me that a production of that length—or rather brevity—within three hours should be regarded as no small achievement

And since then I have been an amateur journalist—an innocent sort of addiction which enables one to declaim thoughts without the unpleasant consequences apt to follow upon itinerant monologue *coram publico* And how pleasant it is on occasion to relax from a self imposed subjugation, to write a medical article when space is comparatively unlimited and one can run riot with an orgy of cherished expressions for a select audience which will not challenge their meaning or appropriateness

* * *

Not so long ago I chanced upon "A Short Autobiography of an 18th Century Physician" and was interested to learn that medical literature in his day was very much like that at the present He referred to the same national differences that we remark the futility of one, the ponderosity of another, the unreliability of a third The author deplored the circumstance that the same sort of men wrote and refrained from writing as we observe at the present day the younger men with plenty of time and ambition but little experience, the older men with plenty of experience, but, generally speaking, with little time and often less inclination to produce that for which the world might well be grateful

So far as medical journalism for the public is concerned, I fancy there are two types of contributors, both of which are with difficulty restrained One *writes through an insistent craving to find self* expression and a satisfaction in contemplating the creatures of his brain The other aims at self-advancement or more often is the victim of misguided obsession with a fanaticism which impels him, in a spirit of philanthropy, to dictate the laws of health to mankind through the medium of the popular press Inevitably his enterprise, however motivated, must always be regarded with a certain suspicion as a form of advertisement and, therefore, of infamous conduct in a professional sense But to my way of thinking, a more serious indictment is that so far from conferring a boon upon our fellow man by dictating the elementary rules of health, dietetics, and so on, such a proceeding is likely to be a disservice There is no more enviable creature than the man who is profoundly ignorant of the machinery of his body · popular instruction on this subject is only too likely to make him introspective or morbid

I sympathise with the mother who wrote to the schoolmistress vigorously protesting against the inclusion of physiology in Maggie's curriculum. "It don't do 'er no good and only makes 'er rude"!

* * *

But to return to the general principle. What indictment shall be extended to medical journalism as a whole? Nobody objects to the appearance in the lay press of a report upon a recent scientific discovery or a new treatment, for popular interest in medical science is and always will be perennial. But the writer should make it a condition of publication that his contribution is not accompanied by a puffing commentary and stipulate that his portrait shall not appear, lest he convey the impression that he is representing himself to be a pre-eminent authority whom it would be wise to consult in preference to any of his colleagues. It is all very well, however, for him to make in good faith any sort of stipulation. His wishes may be entirely ignored and his subsequent disclaimer may or may not receive sympathy. In some cases the disclaimer will be interpreted as additional evidence of his attempt to secure publicity.

Suppose he embarks upon a journalistic career which embodies the innocent pastime of utilising his special knowledge to impart a little information wrapped up 'as entertainment' to explain, for example, the cause of stitch or of sea-sickness, to inquire into the mental and physical peculiarities of twins or the possible evils of tobacco-smoking, or to speculate whether it is worse to be deaf than blind. Or, again, to seek scientific justification for familiar proverbs such as "After dinner rest awhile"; "Laugh and grow fat"; "One man's meat is another man's poison"; "Feed a cold and starve a fever"; "Hunger is the best sauce"; "Bread is the staff of life"; "Cast not a clout till May be out." Should the author of these be accused of seeking undue publicity? Suppose that he wishes to write upon art, music, literature, photography, sport, or any other of the innumerable interests in which the doctor may be a gifted amateur, more especially as it has frequently been observed that members of our profession display the same whole-hearted devotion to their hobbies and avocations that is evident in their professional life, a faculty which makes their ex-cathedra pronouncements on any subject eagerly welcomed. Should he be charged with the accusation of seeking to attract to himself a practice through fame in an activity completely outside medicine? Actually, so far from his reputation in other spheres being of advantage to him professionally, it is only too likely to have the opposite effect: doubt and discredit are cast upon a doctor who sets up to be an expert outside his occupation; he should stick to his last. And yet, if write he must, he will never escape the possibility of criticism for an attempt at advertisement. The anonymity he might gladly seek whilst securing sufficient satisfaction through self-expression is not easily ensured. Unsigned articles on technical subjects make little appeal to the editor or the public for whom he caters. "A Doctor," "A Consulting Physician," or "A Harley Street Specialist" may conceal the identity of one of unexceptionable authority but most people are disposed to a different interpretation; and the signature which has come to be accepted as that of an expert in the particular subject enhances the value of an article from little or nothing to a thing of price.

Well, you cannot have it both ways and it is not surpr[illegible] many of our most gifted writers—and there are indeed gifted writers within our ranks—rather than incur the tiniest risk of criticism or censure prefer the absolute rule of refusing to allow one word upon any subject whatever to appear under their signature in the lay press.

* * *

As regards writing on the whole, I doubt if there is any body of educated men so reluctant to put pen to paper. The majority of doctors would rather waste ten minutes of their time and twenty minutes of yours, to say nothing of the irritation involved and the possibilities of error through instrumental distortion, by telephoning details which could be committed to paper in three minutes.

Panel and Contract Practice

Health Insurance in London

THE report of the London Insurance Committee for 1938 shows that there were 2241 practitioners on the committee's list, of whom 2086 were in general practice and 155 were medical officers of institutions. During the year 246 practitioners joined the list and 203 withdrew. The number of insured persons on the lists of practitioners was 1,890,701, compared with 17,861 on the lists of medical officers of hospitals and other institutions. The average number of insured persons per list for all practitioners was 852. There were 203 medical partnerships in London, 179 being partnerships of two practitioners, 18 of three, 5 of four, and 1 of five practitioners. During 1938 225 practices were transferred in whole or in part, and 15,110 patients transferred at the end of the quarter from one doctor's list to another's; this figure represents 0·8 per cent of the medical register and suggests there cannot be widespread discontent with the services rendered. Postgraduate facilities are now available for insurance practitioners generally and during 1938 69 London insurance practitioners attended courses of study at the British Postgraduate Medical School and elsewhere. No fewer than 8,882,243 prescriptions were issued by insurance practitioners in London during the year, and it is probable that the number of consultations also approximated to this figure. It speaks well for the service that in spite of this vast total in only 19 cases—and some of those did refer to treatment—was any question raised which necessitated inquiry by the medical service subcommittee.

THE LANCET 100 YEARS AGO

May 4, 1839, p. 228.

From a leading article.

PLASTIC surgery has not been cultivated with so much ardour, in this country, as it deserves to be. While our columns have been enriched with several valuable original papers and cases by DIFFENBACH, of Berlin, the number of successful plastic operations in England has been inconsiderable. Lord LYNDHURST recently took his daughter to Paris to have the operation for cleft palate performed upon her,—Prince GEORGE of CUMBERLAND was sent to Berlin to submit to the operation of couching,—STROMEYER has invented the simple operation for club-foot. But what has latterly been done in the English Hospitals to promote English surgery, and to place it at least on a level with the surgery of France and Germany? Certainly little; and little will be done until surgeons who are not attached to hospitals enter the field.

LETTERS TO THE EDITOR

DIPHTHERIA—A PREVENTABLE DISEASE

SIR,—The introduction of compulsory immunisation against diphtheria in France and Hungary by recent legislation should cause health officers and other members of the medical profession in this country to consider the failure of voluntary measures to achieve protection of the child population against this disease There would still be cause for anxiety if this feebleness of achievement were confined to remote areas of the country, but we cannot condone the complete lack of success in the large centres of population

In a comprehensive review in your issue of Jan 7 E H R Harries quoted figures which show that the percentage of the population immunised is nowhere sufficient, and in most cases falls far short of the desired level of protection It has been estimated that between 50 and 70 per cent of the population under fifteen years of age must be effectively immunised before any significant reduction in the incidence of diphtheria will be apparent Our progress towards this objective has been exceedingly slow in spite of the general agreement among health workers, for at least ten years, on the efficacy of active immunisation The average figure for the London metropolitan boroughs in 1937 was 5 3 per cent of the child population immunised (MacNalty 1938)

In hospitals for infectious diseases we have been impressed by the fact that few parents of the child patients, who are drawn from a wide area of London, are aware of the existence of measures for protection against diphtheria We would therefore attribute public apathy largely to ignorance, and the charge of failure to inform the general public must be laid against the municipal authorities and the health officers

A fuller education of the public is essential to ensure success There are no valid objections to the methods of immunisation used at the present time and the inconvenience from the injections is negligible Is it too much to hope that medical officers of health and medical organisations will undertake this task seriously and use propaganda to its fullest extent ?

We are, Sir, yours faithfully,

A A *Cunningham*,
R M *Campbell*

Hither Green, April 24

INTUSSUSCEPTION

SIR,—Mr Frank Forty in your issue of April 22 points out that the enlarged mesenteric glands so constantly seen in intussusception must be present before its occurrence, and suggests that the enlargement is due to an acute enteritis which also brings about the intussusception by colicky contractions The commonest variety of intussusception is the ileocolic with the apex in the terminal ileum in the majority of these cases this apex will be found to be an oval œdematous mass involving a portion only of the bowel wall and projecting into the lumen, corresponding exactly with an enormously hypertrophied Peyer's patch This mass projecting into the bowel will act as a foreign body and initiate the intussusception

Mr Forty's suggestion of acute enteritis as a cause of the lymphatic enlargement does not correspond with the clinical history in intussusception ; the traditional bouncing boy is usually perfectly fit until the catastrophe, and Barrington Ward in "The Abdominal Surgery of Children," says that "intussusception is more likely to occur in slightly constipated children than in the infant suffering from enteritis" Neither does it fit the post mortem findings in acute enteritis of infants where enlargement of the mesenteric glands is not characteristic

The statement that the age periods of enteritis and intussusception coincide is not borne out by statistics Acute enteritis, as shown in Dr J M Smellie's article in your issue of April 29, is commonest in the second and third month while intussusception is rare before the fifth

The lymphatic enlargement appears to be a chronic rather than an acute process, with perhaps increased engorgement due to dietary indiscretion as the determining factor We still have no evidence of the true cause of the enlargement

I am, Sir, yours faithfully,

D Owen Davies

Golders Green, N W 11, May 2

SIR,—Mr Ian Fraser's experience of four intussusceptions in the same patient is almost as unusual as the fact that all the operations were performed by himself I have myself operated on a patient who had three such operations, but I was only permitted to perform one of these Mr Fraser's case is an undoubted rarity ; but the second part of his communication, which discusses the accompanying glandular enlargement and its causation is in my opinion of even greater importance Mr Frank Forty has picked out this aspect of the problem for discussion There is, however, still another question which may be considered If the relationship between the glandular enlargement and the intussusception be that of cause and effect, by what mechanism is this effect produced ?

In common with most surgeons attached to a children's hospital, I was early struck by the frequent association of enlarged lymph glands at the ileocæcal angle with ileocæcal intussusception The conclusion was soon forced on me that this was more than a mere coincidence, for some enlargement of these glands is invariably present, whilst in many cases the enlargement is extreme In one case the mass resembled a tightly packed bunch of grapes perhaps half a pound in weight About the same time I also began to be impressed by the fact that enlargement of the lymph glands in the mesentery of the small intestine can give rise to symptoms and signs sometimes indistinguishable from those of acute appendicitis

With Mr. Forty's suggestion that the glandular condition in intussusception may be due to a simple acute enteritis I cannot agree In my opinion this seems unlikely for the following reasons (1) patients developing intussusception rarely if ever give a previous history of ill health ; (2) a simple acute enteritis does not as a rule show gross enlargement of the lymph glands , (3) when the abdomen is opened there is never any direct evidence of enteritis , (4) recovery after operation for a reasonably early ileocæcal intussusception is immediate and complete

Let us consider the common history of a typical case of ileocæcal intussusception In brief an apparently healthy breast fed child, about the end of its first year of life, is suddenly seized with acute colicky abdominal pain The child has recently added artificial food to the mother's milk and the new food is, in part at least, composed of cow's milk The latter is, I believe, the critical factor The symptoms of intussusception come on with dramatic suddenness without previous complaint of any kind The diagnosis is usually clear because of the typical onset and the characteristic symptoms and signs, and operation discloses a unique pathology. May I state at once that I believe the glandular enlargement of these cases to be of tuberculous origin for the following reasons.—

1. Bovine tuberculosis is the commonest cause of gross glandular enlargement not in itself giving rise to symptoms.
2. Enlargement of lymphatic glands to the degree found can result from tuberculous infection within the period during which the child has been getting cow's milk I base this on the fact that similar enlargement of glands of tuberculous origin takes place within this period in the neck, where the fact of the swelling and its progress are open to observation. In a case of my own the father kept a herd of tubercle-free cattle and the child was brought up wholly on tubercle-free milk At the age of two he was taken to the seaside and was given ordinary milk. In six weeks' time he returned home with a large mass of glands in the neck in which tubercle bacilli were found in large numbers.
3. I have on several occasions found amongst the glands at the ileocæcal angle one which has shown definite caseation, though I must admit that on other occasions when the glands did not show obvious caseation and one was removed for examination the report received from the laboratory was "simple hyperplasia." This, however, does not exclude tubercle as a cause, for a similar report was received several times upon glands adjacent to those showing indisputable evidence of tuberculous origin
4. Enlarged mesenteric lymph-glands situated in the mesentery and without obvious lesion in the intestine can give rise to colicky pain. The late H. W. Carson (1918), though not the first to call attention to this condition in England, contributed the first considerable article upon it, and attributed the pain to transient intussusceptions which resolve spontaneously. In his article he describes a case in which this actually occurred during the progress of an operation.

The sequence of events in intussusception I imagine to be as follows. The breast-fed child is as a rule reared on tubercle-free milk; it is therefore denied the opportunity of developing an immunity against tuberculous infection On being given ordinary cow's milk it receives a grossly contaminated feed containing tubercle bacilli in such numbers that natural immunity is overcome, infection takes place and the defensive reaction of the glands is called into service The glands, having become enlarged, interfere with the normal control of peristalsis by stimuli passing to the lower few inches of the ileum through the sympathetic and parasympathetic system. In this way, according to Carson's view, disordered contractions occur and intussusception follows In a hasty search in the recent literature on the autonomic nerve-supply to the ileocæcal region I have not found a clear explanation of the exact mechanism by which this happens I am, Sir, yours faithfully,

S T. IRWIN.

Belfast, April 27.

ANEURYSM OF POPLITEAL ARTERY

SIR,—The paper by Mr Cecil Flemming in your issue of Feb 11 (p 322) and the letter from Mr. Cameron MacLeod on Feb 25 (p 478) cause me to mention a case of my own in which resection of the segment of artery bearing the aneurysm, with preservation of the vein, led to a successful result without causing anxiety as to the circulation in the limb. A full account of my case has been accepted for publicat[illegible]y the *Australian and New Zealand Journal of Surgery*. It would be improper therefore to add more than these brief particulars.

The patient was a male Maori, 59 years of age, of magnificent physique. Nine years before he had a severe injury to both popliteal spaces through some sheets of iron, on which he was sitting in a cart, being driven forward and pinning his knees against the back of his horse There had been severe circulatory disturbance at the time, again twelve months, and again three weeks before. The aneurysm was saccular, and the size of a hen's egg. There was a smaller one on the other leg. It had clearly formed through a partial rupture of the arterial wall, the media on section being curled up and down on either side of the gap leading to the sac. About 6 cm. of the artery was removed.

The only difficulties were tardy healing of the wound and venous thrombosis in the calf during convalescence. The final result was good.

I am, Sir, yours faithfully,

Auckland, N.Z, April 14 DOUGLAS ROBB

TO WORRY OR TO FORGET?

SIR,—"Don't worry" is the advice frequently given by both medical men and laymen, together with the positive injunction "you must forget it," to sufferers from chronic diseases, such as tuberculosis of the lungs Let us consider this way of forgetting.

Forgetting is a natural reaction of the mind to the unpleasant or painful. The importance of forgetting was borne in upon me in the following way In October, 1936, a patient, recently returned home from sanatorium, came to see me I asked him, "How are you spending your time?" He replied, "I sometimes sit and wonder how I can forget It" This impressed me; it seemed significant, and from that date I have been trying to discover how other patients react to the disease Another man said, "You told me not to worry, and so I went into the sanatorium to forget It I did things, like reading, but the topical budget was tuberculosis, and when you see others with hæmorrhages, you can't forget It." After five months he returned home "fed up." At home there was no mention of It This startling statement stimulated me to continue this investigation It seemed more than ever worth while to know what was the attitude of the patient to his or to her disease ("It," to use a short word)—in other words, how tuberculosis affects the mental life of the patient.

Some 25 or 30 cases have been studied. There appear to be three attitudes of mind or three phases of thinking and feeling. The first stage is worry or anxiety. It is associated with depression or resentment and irritability. The fact of tuberculosis seems to fill consciousness, and there may be questionings such as "Why should I have this? Why should I have to stop work and enjoying myself and go into hospital or sanatorium?" Some patients stick to this phase, but others move on. Friends say, "Don't worry"; doctors say, "Don't worry; do as you are advised."

Tuberculosis may be a medical problem in some cases and an economic problem in others, but it is always a mental problem in every case To worry or to forget? That seems to be the question, and many decide in favour of the latter and agree, when advised not to worry, "I must forget It and take my mind off It." Forgetting is the withdrawal of the personality, just as the body withdraws from a painful impression, such as a pin-prick or a hot plate. There are various degrees of forgetting. In some cases the personality succeeds in repressing completely all painful symptoms, and consciousness is filled with a phantasy of perfect health This is the spes phthisica

There was a patient, aged 12, in the children's sanatorium, an advanced case, bedridden, whose mother stated that, when the patient was in that state, she wrote home and said that she was quite well and playing with the other girls

Another patient said, "I forget about anything I don't want people to ask, some are so inquisitive I walk along as though nothing is wrong—I'm fine, I'm a dandy Then my breath goes, and I'm pulled up as with the crack of a whip" This patient died some three months after, much to my surprise, for, on physical grounds, there was no reason to expect such an early termination

Another patient took his own discharge from sanatorium, for he was discontented He had no complaints He went off his sleep "I'm not worrying, I'm making the best of it, but it is hard when you are dependent I have never had to humble myself I'm not sleeping, I thinks when I didn't oughter In my mind I travel, I turn my thoughts to divert my mind from my health and condition of living" This was why he could not go off to sleep

Another patient reported that he could not keep still "He had to be doing things"

This restlessness of body and mind may be just an effort to forget and, in the intellectually gifted and artistic, may produce works of genius

From this study I began to understand more clearly many of the difficulties arising from efforts to treat patients For example —

(1) Patients decline to go into a sanatorium but are willing to enter a chest hospital or the tuberculosis wards of a municipal general hospital because it is easier to forget that you have got It in the latter institutions

(2) Patients don't settle in sanatorium because they can't forget It, let me quote another patient "They were all miserable sinners—it was tuberculosis for breakfast, tuberculosis for dinner, and tuberculosis for tea You could not forget It, whereas at home there is a conspiracy of silence"

(3) Sleep may be delayed for two to three hours, because in the day-time a patient can find things to do to take his mind off It, but when in bed he can't do things and has to think of what he has done or might do Another patient said, "I used to be in bed and build things in my mind—huts and houses" On the other hand, there appear to be some patients who welcome sleep as a way of escape.

One can understand why patients fail to coöperate The way of forgetting may lead to relapse A girl said that "she just did the same as her sisters and went to the pictures" A man went to the public house

Another male patient stated that he had had tuberculosis some years before and, after a period of sanatorium treatment, made a good recovery and remained well for ten years He forgot that he had had tuberculosis, it never entered his head He got a job in a motor factory and worked long hours, from 7 30 A M to 9 or 10 P M He had no proper meals In 1937 he had a relapse He says now that "he can't forget It," and that his wife is always saying to him, "It's dangerous when you cough, you scatter millions of germs" His wife said to me "He is irritable; he never mentions It or talks of the sanatorium"

When we encourage the patients to forget, it is well to understand what may happen and to see the difficulties bestrewing the path The way of forgetting may be pursued peacefully for a time, but at many points this progress may be upset. In the first place, there may be some symptom, a direct result of the disease and so a constant reminder of it cough, sputum, pain thinness of arms, shortness of breath, or staining There are also visits to the doctor for the medical certificate and periodic examination at the dispensary The neighbours avoid one or look at one in a certain way, acquaintances and work mates no longer visit Members of the household may conspire to keep silent but, on the other hand, they may constantly remind the patient of It The brothers and sisters go to work, return home in the evening, and on Fridays come home with their week's pay, but the patient stays at home and receives his or her sick pay, 6*s* or 7*s* 6*d*—whatever it may be One begins to understand the morbidness, the moodiness, the tears, the irritability, and the restlessness To the patient, to worry and to forget seem to be the only alternatives They are the Scylla and Charybdis of life

Fortunately, there is a third way, perhaps it is a middle way Out of the number of cases studied, only one patient seemed to have discovered it He was notified as a case of tuberculosis of the lungs in 1931 When I saw him in 1936 he said, "I have found a philosophy I have made tuberculosis a part of me, it is no use repressing" This seems to be the way of permanent recovery—to accept the fact of the presence of tuberculosis and all its consequences but to remember that there is a way of arresting the disease and, with perhaps some measure of disability, achieving health. Space will not permit of discussing the way in which a patient can be helped to discover this middle way.

Several questions arise in my mind What is our attitude, as physicians, to It? Do we try to forget it in multiplying our surgical measures, radiographic examinations, and sedimentation tests? Do our methods of treatment, propaganda, or administration prolong the stage of worrying or forgetting? Why do some of the patients remain in the first or the second phase and so few discover the middle way? Here we touch on an important question is there a morbid diathesis or a temperament that predisposes an individual to worry? I do not propose to endeavour to answer this question. The study of the mental effect of tuberculosis is well worth while It is as important as studying the physical effect of the tubercle bacillus, whether by stethoscope, X rays, or microscope

To sum up In a small group of cases of tuberculosis of the lungs the mental attitude of the patients has been studied, and the following deductions have been drawn (*a*) *three ways of thinking about* the disease have been observed—worrying, forgetting, and accepting, (*b*) all cases have passed from the first phase to the second, only one passed on to the third phase; (*c*) failure of coöperation may be one of the consequences of the phase of forgetting, and (*d*) the final phase of accepting the fact of the disease is the *only satisfactory attitude*

I am, Sir, yours faithfully,

Balaam Street, E 13, April 22 P A GALPIN

AIR-RAID CASUALTIES IN LONDON

SIR,—The general plan of the sectors for dealing with air raid casualties in London has now been published for several weeks[1] and the details of the organisation of sectors are coming through to individual hospitals and staffs You have also publi[illegible] an article by L Crome, R E W Fisher and [illegible] Shirlaw which outlined a short term scheme d[illegible] on the

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1 *Lancet*, March 25 1939, p 723
2 *Ibid* March 18, p 655

sharply from the organisation which is apparently being planned in the sectors. Your reviewer of "Medical Organisation and Surgical Practice in Air Raids"[3] pointed out a weakness in the scheme suggested by the authors of that book, in which it is stated that, while sorting of cases is neither possible nor desirable in the danger area, transport for the evacuation of casualties may be completely disorganised by a heavy bombardment. It is perhaps presumptuous to criticise the officers in charge of sectors who are having to plan a scheme for circumstances of which no-one in this country has any experience: but they have now completed their survey of the resources of personnel and medical buildings and equipment in each sector, and the differences of opinion persist as to the best utilisation of the resources of the sector

In planning a military manœuvre, it is customary to precede the issue of special instructions by a general appreciation of the situation. The sector officers are working on the special instructions without the guidance of a general appreciation and it is about this point that the differences of opinion arise If the scheme of Crome, Fisher and Shirlaw and that of Mitchiner and Cowell are compared, it will be seen that the latter proceed on the assumption that the problems of civilian air-raid casualties and of military casualties in moving warfare are the same, whereas the former regard the analogy as being incomplete: the "general appreciation" is quite different and therefore the "special idea" is necessarily quite different. An analysis of the differences may be helpful

The military operations in France in 1914–18 were regarded as moving warfare. That they were in fact very stationary did not affect the organisation, which was set up on the assumption that a break through by one side or the other was possible, and so the casualty-clearing station (C C.S.) was placed at some distance from the fighting line, the exact location of which might in theory vary to a considerable extent. An aerial bombardment of London is really comparable to siege warfare, and in siege warfare it is certain that until the beleaguered town falls or the siege is raised the fighting line will always be the same It is therefore possible to give to the organisation behind the fighting line a more permanent form than can be achieved in moving warfare. It is common ground that any war wound should receive skilled surgical treatment at the earliest possible moment; and the C C S. is the first place where such treatment is available. In moving warfare the C C.S is of necessity some miles from the fighting line and the wounded suffer in consequence the tragedies of delayed treatment: in siege warfare the C C S can be sited in buildings which can be fortified and the benefits of early wound treatment can be made available. There is of course in the latter case the risk that the C.C.S. may itself be hit in a bombardment, but it may be emphasised again that the inherent permanence of this type of war enables a considerably greater degree of protection to be provided for the C C S than can ever be given to the C C S. of moving warfare, which must itself be prepared to pack up and move away.

It is certain that the delay in reaching the C C.S. [illegible] moving warfare, inevitable as it is, is a bad thing, [illegible]re is however a compensation. Because the [illegible]ng line may change and the C.C S. shift, the line [illegible]uation of wounded does not necessarily remain [illegible]d: in the fixed siege type of war, the evacuating lines share the general immobility and vulnerability of everything else Further, in moving war, the casualty knows that safety is to be found by getting away to the rear.

The analogy between an investing siege of London and successive aerial bombardments is not quite exact, because there is the hope that escape might be possible from the city in the latter case, and on that hope is based the stationing of surgeons at Epsom, Northwood, Watford and other towns outside London. It is worth noting that the fixed lines of evacuation will be under fire from enemy action and falling shell fragments, and the latter will be very large in number. The siege may for many hours be nearly complete: the casualties will be inside, the surgeon outside.

One additional point should be considered, about which there can be no deduction from past experience. Much stress is laid on the effect on morale of removing the casualty from the danger area The fighting soldier knows that safety is to the rear: the civilian is used to medical treatment in the nearest hospital. It is at least arguable that the discovery that surgical treatment is not available for ten miles will have a depressing effect on morale.

The surgeons whose experience was gained in the war in France are accustomed to the idea of treating war casualties 8–24 hours after the infliction of the wound. Surely the circumstances of an air-raid demand the placing of the surgeons, adequately protected in buildings not necessarily designed as hospitals, nearer to their patients It would be considered unwise to send a case of perforated duodenal ulcer from central London to Watford for treatment in peace-time with clear roads · to send the patient with perforation of the intestine after delay at a first-aid post on the same journey over roads or railways damaged by bombs under falling anti aircraft shell must be wrong

The wounded will be the sufferers from any medical breakdown: personal professional difficulties must not be allowed to have any importance In the hope that the points raised in this letter may be considered on their, and not the writer's, merits, I ask to be allowed to sign myself,

Yours faithfully,

X.

London, W 1, May 2.

AN IMPROPER PARAGRAPH

We have been requested by the *Sunday Pictorial* to publish an apology to Mr. J. Lyle Cameron and to the Royal Waterloo Hospital which appeared in its issue of April 30.

MR. LYLE CAMERON

AN APOLOGY

In last Sunday's *Sunday Pictorial* there was a reference to an action brought by a Miss Gladys Moore against Mr. Lyle Cameron, of Wimpole Street, the women's specialist, and against the Royal Waterloo Hospital. It was stated that Mr. Cameron and the hospital were being sued by Miss Moore for damages arising out of operations. It is recognised that this paragraph, which appeared by inadvertence, should never have been published, as the action against the hospital has, in fact, been struck out as disclosing no reasonable cause of action, and that against Mr Cameron is being strenuously contested.

We accordingly desire to take the earliest opportunity of apologising unreservedly both to Mr Cameron and to the Royal Waterloo Hospital, and expressing our sincere regret for any harm which may have been done to the reputation of Mr. Cameron or the hospital by this publication.

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[3] *Ibid*, April 1, p 763

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By Medicus, M P

This last week in Parliament will stand out as that in which a British prime minister introduced conscription It is an inevitable result of the many European commitments into which Great Britain has entered in order to ensure peace by the collective organisation of security Although the adoption of conscription arises as part of a policy aiming at a united Europe, its immediately effective cause is a menace to the security of this continent closely parallel to the menace of Napoleon History as always repeats itself, there are new names and newly phrased national ideals, as in Germany and Russia, but the realities of the political and economic interests of the nations are fundamentally the same now as in the past Hence the alliances which Great Britain enters into, compelled by events But there is a new factor The organisation of the League of Nations remains and it is capable, when the nations are ready, of becoming the all inclusive alliance in which the problems of a constructive peace can be solved around the conference table

The sciences stand ready, with tremendous powers in their hands which a constructively thinking Europe can use to create great wealth and great prosperity In agriculture, in medicine, in physics and chemistry, in engineering great powers are awaiting use In this present period of the contest of power politics these powers are limited because they can and must serve national ends But not least significant of the facts that stand behind the immediate conflicts of politics at the present time are these great powers of the sciences and the realisation by doctors and other scientifically trained people of the meaning and significance of the social relations of science

* * *

The debate on the Civil Defence Bill opened the week on Monday The bill has already passed its second reading and is being taken in committee of the whole House—that is on the floor of the chamber by all members instead of upstairs by a specially appointed committee of members The effect of this is to secure greater freedom and *publicity for the debates* The committee stage opened with an amendment in the name of Dr Haden Guest, Labour M P *for* North Islington, to leave out certain words of the first clause dealing with the power of the Lord Privy Seal to delegate his powers to others The object of this amendment was to clear up the considerable degree of confusion which *has arisen as* between A R P duties *under* the Home Office the Ministry of Transport, and the *Ministry of Health* *At present* the M O H of an area, whether it be a county, a city, or any smaller area, may get contradictory instructions from different departments M O H 's of metropolitan boroughs regard the confusion such as to make an efficient first aid service impracticable in either war or peace But the condition in the counties is also disturbing Mr Chuter Ede, Labour M P for South Shields, agreed that what had been said about London applied equally to counties and he spoke officially for the County Councils Association *A grave point of* difficulty is that stretcher bearer parties are under the Home Office and first aid posts under the Ministry of Health The reason for this (as given by Sir John Anderson, speaking as Lord Privy Seal, designated *for the work of counties defence by the Home* Secretary—this is just to make it more difficult) is that the stretcher bearer parties will be working in the street and must therefore keep closely in touch with other street parties, such as decontamination squads, breakdown parties, auxiliary fire services, and police But it was felt that that was putting the cart before the horse Stretcher bearers in the street must naturally work closely with others—including, by the way, the ambulance service, which is either under the Ministry of Transport or Ministry of Health—but its work must dove tail with and be part of the organisation of first aid as a whole and therefore fit in with the first aid posts This is by no means a question of detail which may be settled *equally satisfactorily* in a number of ways *It* is a question of primary importance because on the method of its settlement the efficiency of the casualty-clearing arrangements in time of air bombardment *may depend Sir John Anderson stuck to his point* despite the criticism he received on both medical and local government fronts, but he will have to give way eventually because the matter is one not of paper administration but of practical medical organisation and the M O H 's of the county are more and more against this split up of duties

* * *

The week was also Budget week On the Tuesday Sir John Simon opened his budget and it is an *interesting footnote to remember that Sir John was* a member of the Government in the Great War period and resigned from it because of his opposition to conscription The budget this year dealt in many millions, and it disposed of sums of money on the services and civil defence greater than ever before in "peace" time—to the tune of about £2,000,000 a day But its passage aroused less controversy than is usual The money must be provided for defence and other services and that's all about it What future generations will have to pay—well, if we do the best we can they must do the same in their day *In contrast to the conscription issue the budget* was almost an "also ran"

Preoccupation with war and defence has not so *far at least prevented matters of social interest* claiming great attention Pensions for spinsters at 55 have become a social issue of first class importance and spinsters would seem to have a good claim to special consideration A woman of 55 may be as good in the tables of vital statistics as a man, or better, but she is certainly not so good in the labour market The demand for spinsters pensions is part of the general demand for greater social protection for different sections of the community This particular problem may have to be settled along with other pensions problems, but it is a real one and will have to be met

Another activity of the week of special interest to Parliament was the nutrition conference of the B M A, presided over by Sir Arthur Salter, M P, and addressed on family allowances by Mr L S Amery, M P, with many ministerial chevrons on his sleeve and a new campaign in front of him to improve the conditions of life of the least well circumstanced *of the population To the distinction of the medical* side of the B M A conference I do not need to refer, its parliamentary political side is, however of particular importance because it means that nutrition linked up with general health problems and the general agricultural problem, has become a first-class political issue The admixture of medical science in the political mixture in these proportions will alter its effects very considerably. Add medicine to politics and you get not "the stock mixture as before" but a vitamin combining science and politics in a new way.

QUESTION TIME

WEDNESDAY, APRIL 26

Fracture Clinics

Sir Arnold Wilson asked the Minister of Health in what localities and under what auspices fracture clinics at present existed in Britain on the lines advocated in the interim report on the Rehabilitation of Injured Persons.—Mr. Elliot replied: I am informed that fracture clinics substantially on the lines advocated in this report have been established in the following localities:—

Geographical county	By local authorities	By voluntary hospitals	Total
	ENGLAND		
Chester		4	4
Derby	—	1	1
Durham	—	2	2
Essex	1	4	5
Gloucester	—	4	4
Kent	—	2	2
Lancaster	3	14	17
Leicester	—	2	2
London	—	6	6
Middlesex	1	—	1
Soke of Peterborough ..	—	1	1
Northumberland	—	1	1
Nottingham	—	3	3
Somerset	—	1	1
Southampton	—	1	1
Isle of Wight	—	1	1
Stafford	—	4	4
East Suffolk	—	1	1
Sussex (East)	—	2	2
Warwick	—	2	2
Worcester	—	1	1
York (E Riding)	—	2	2
„ (N Riding)	—	2	2
„ (W. Riding)	—	7	7
	WALES		
Glamorgan	2	—	2
Monmouth	—	1	1
	SCOTLAND		
Lanark	—	1	1
Totals	7	70	77

Biological Research and Defence Camouflage

Mr. Graham Kerr asked the Chancellor of the Duchy of Lancaster whether, in view of the highly specialised biological knowledge necessary to secure full advantage from certain forms of war camouflage, he was prepared to set up an advisory body comparable with the camouflage subcommittee of the Committee of Imperial Defence, but including in its membership persons of recognised authority on the biological principles involved, which should be available to afford advice and guidance to those responsible for carrying out camouflage work in the four services—air, army, navy and civil defence.—Mr W. S Morrison replied · There is already in existence a special section responsible for conducting investigations into the problems of camouflage, including the biological principles involved, and this section is in a position to obtain advice at any time from those whose special knowledge can contribute to the progress of those investigations This is a research section supported jointly by the four services to which my hon. friend refers and it is available for consultation by those responsible for carrying out camouflage in those services.

Dating of Canned Foods

Mr Bull asked the President of the Board of Trade whether, in view of the recommendations to the public to make, where possible, some slight provisioning of households with tinned or canned foods, he would consider legislation to ensure the marking on the tins or cans of the different dates when the contained articles were placed in the receptacles.—Mr. Elliot replied: The powers contained in the Food and Drugs Act, 1938, which comes into operation on Oct 1 next, will be wide enough to enable me to require date marking on wrappers and containers But, as at present advised, I am not satisfied that the advantages which might result from such a requirement would outweigh the administrative and technical difficulties involved

THURSDAY, APRIL 27

Gas-masks in Hospitals

Mr. Kirby asked the Lord Privy Seal what arrangements, apart from the general scheme of supply to individuals in their own homes, had been made to ensure an adequate supply of gas-masks in the hospitals and poor-law institutions of Liverpool for the use of patients and inmates during a period of emergency.—Sir John Anderson replied: The numbers of persons in these institutions were included in the figures, supplied by the local authority, on which the issues of respirators have been based The local authority therefore have sufficient respirators for the purposes mentioned in the question.

Mr. Lyons: *Can the right hon. gentleman say whether that is the practice that has been pursued in every large city?*—Sir J. Anderson: That is certainly the general practice.

Probationer Nurses and Examination Fees

Mr. Batey asked the Minister of Health if he was aware that probationer nurses had to pay £2 each before they could sit for their preliminary examinations, and nearly £4 before they could sit for the final examinations, who received this money, and why it should be paid by probationer nurses.—Mr. Elliot replied · The fees payable are two guineas for the preliminary examination and three guineas for the final examination They are paid to the General Nursing Council and are used to defray the cost of the examinations. As regards the last part of the question, the hon. member will be aware that it is usual for students to pay the fees for professional examinations such as these

Mr. Batey: Are these fees not rather heavy for young girls to have to pay simply to sit for an examination?—Mr. Elliot: I do not think that they are out of the ordinary for professional examinations.

The Factory Inspectorate

Mr Day asked the Home Secretary the total authorised strength of the factory inspectorate, men and women, for the 12 months ended the last convenient date; and if he could give particulars of the increase that had taken place *in same during the last 12 months*.—Sir Samuel Hoare replied: The total authorised strength of the factory inspectorate on March 31 last was 307. During the 12 months ended March 31 the inspectorate was increased by 26. The appointments included an additional deputy chief inspector, an additional superintending inspector, three medical inspectors, seven engineering inspectors, one electrical inspector and thirteen other inspectors

Football Players and Gland Extract

Mr. Lyons asked the Minister of Health whether he was aware that gland extracts from animals were being administered to football players and particularly to the teams who were to take part in the 1939 cup final, and whether he would order an investigation into this practice with a view to ascertaining its effects and repercussions on national health.—Mr Elliot replied I have no first-hand information on this matter, but the gland extracts *concerned are included* in the medical pharmacopœia, and if, as I have reason to believe, they are administered under medical supervision, I do not think that any special investigation is necessary

Mr. Lyons. Does the Ministry of Health endorse or approve of this form of treatment?—Mr. Elliot. Treatment administered under the supervision of a medical man is not a matter for approval or disapproval by my *Department.*

Mr. **Shinwell** Could not this gland treatment be administered to members of the Cabinet ? (Laughter)

Mr. **Mander** Is the right hon gentleman aware that this treatment is entirely innocuous, that it has been widely administered with beneficial results as regards resistance to disease, and that the clubs concerned would welcome any inquiry that it is thought fit to make ?

MONDAY, MAY 1

New Milk Legislation

Mr. **Price** asked the Minister of Agriculture whether it was his intention to take steps to deal, at an early date, with any of the problems of the production and sale of milk, either along the lines of the withdrawn Milk Industry Bill or along any other lines —Sir **Reginald Dorman Smith** replied I appreciate that existing legislative provision in regard to the milk industry expires on Sept 30 next and I hope to introduce a further measure of milk legislation this summer I am not yet in a position to indicate the lines that this may follow

TUESDAY, MAY 2

The Duty on Patent Medicines

Lieut Commander **Fletcher** asked the Chancellor of the Exchequer if he could give an assurance that the benefits of the abolition of the duty on patent medicines would be passed on to the public by reduction in the prices of the articles concerned, and that the concession would not be solely utilised to increase the profits of the proprietary medicine manufacturers.—Sir J **Simon** replied In evidence before the select committee, which reported in 1937 on the *Medicine Stamp Duties, one* important body stated that if the duty were removed the consumer would receive the whole of the benefit and I rely on the goodwill of other manufacturers and vendors to follow this excellent example

Commander **Fletcher** Is it not very desirable that the repeal of this archaic tax should not result in certain individuals making larger profits than they do at present out of deceiving and gulling the public ?—Sir J **Simon** I am not prepared to accept the suggestion that all remedies deserve epithets of that sort, but it is certainly desirable that, when a duty is abolished or reduced, as far as possible the benefit should be passed on to the public, just as is often the case when a tax is increased (see p 1075)

Report of the Committee on Abortion

Mrs **Tate** asked the Minister of Health if he could now give the date of the publication of the report of the Interdepartmental Committee on Abortion —Mr **Bernays**, parliamentary secretary to the Ministry of Health, replied The report of the committee is now in the hands of the printers and it is expected that it will be published towards the end of this month

MEDICAL NEWS

University of Cambridge

On April 29 the following degrees were conferred —

M.D —*A C E Cole, *C G Pantin, W H G Jessop, and E J M Bowlby

M Chir —D L Lewis and W G Gill

M B —*John Hale and H A. Hamilton

* By proxy

On Fridays May 5, 12, and 19 at 4 30 P M in the department of biochemistry Prof Johannes Holtfreter of the University of Munich will lecture on problems of causal embryology

University of London

At recent examinations the following candidates were successful :—

D P M

With special knowledge of mental diseases —I R C Carson, R. W Crocket, Gordon Diggle, J J M Jacobs, Roderick Macdonald, William Telfer, and D J Watterson

Part A —D W Abse W E Audley, Sophie Bookhalter, and J D Uytman

Society of Apothecaries of London

At recent examinations the following candidates were successful —

Surgery —D H Dracup, R S Holtan J A L Leeming, E O G Miller and J A V Shone

Medicine —N F Bisbay, D Macpherson and F D P Palmer

Forensic Medicine —D Macpherson and F D P Palmer

Midwifery —J J Brunner D Specter and W N Vellacott

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery J A L Leeming (Oxfd and Guys), F D P Palmer (Middlesex), and J A V Shone (London Hosp)

University of Wales

At recent examinations the following candidates were successful —

D P H

Part I —H L Ackerman James Paterson, Idwal Pugh, and R. W Thomas

Queen's University, Belfast

Applications for two Musgrave studentships in pathology, biology, chemistry, physics and physiology, are invited Each is worth £200 a year They are open to British subjects who are graduates of at least one year's standing in a university of the British Empire Applications should be sent to the secretary of the university by June 1

Royal College of Physicians of London

At a meeting of the college on April 27 with Dr Robert Hutchison, the president, in the chair, Prof Harvey Cushing was elected an honorary fellow Sir Charles Blackburn and Dr S V Sewell, president and president-elect of the Royal Australasian College of Physicians, and Dr N G Horner, editor of the *British Medical Journal*, were elected fellows under by law XXXVIII (b) The following members were elected fellows —

Mildred Carlill, M.D Camb (London), Walter Henry Grace M D Lond (Chester), Group-Captain Alan Filmer Rook (London), Isaac Jones, M D Melb (London) Lewel Israel B Braun, M D Lond (Johannesburg), Frederick Martin Brice Allen, M D Belf (Belfast); Louis Forman, M D Lond (London), Ronald Epey Lane M.B Lond (Manchester), Trevor Owen, M.B Toronto (Toronto), Norman Bruce Williamson, M.D Edin. (London), Eric Benjamin Strauss D M Oxfd (London) Colonel Edward Selby Phipson, M D Lond (Assam) Geoffrey Lawrence Samuel Konstam, M D Lond (London) Ronald Edward Smith M B Camb (Rugby), Albert Victor Neale M D Birm (Birmingham), Hugh Gregory Garland, M D Leeds (Leeds) Cuthbert Leslie Cope, D M. Oxfd (Oxford), John Callis Hawksley, M D Lond (London), John Smith, *M D* Aberd (Aberdeen); Hugh Crichton Miller, M D Edin (London), Rupert Samuel Bruce Pearson, D.M Oxfd (London), Frank Patrick Lee Lander M D Lond (London) Richard White Bernard Ellis M.D Camb (London) William Donald Wykeham Brooks D.M Oxfd (London), Janet Maria Vaughan D M. Oxfd (London) Robert Pierret M D Lyon (Paris) William Allen Daley, M D Lond (London), Naguib Mahfouz Pacha, M B Cairo (Cairo) Sir Henry Bashford, M D Lond (London) William Fletcher Shaw, M D Manc (Manchester), and Henry Francis Moore, M D Dubl (Dublin).

The following were admitted members of the college :—

Alice Josephine Mary Taylor Barnes, M.B Oxfd Amiya Kumar Basu M B Calcutta, Richard Maxwell Biggins, M B Melb, Manindralal Biswas M B Calcutta, John Henderson Bolton M D Melb Josiah Mark Bonnin, M B Adelaide, James Eric Clarke M D Melb, William Paton Cleland, M B Adelaide William Richard Shaboe Doll M B Lond, William Henry de Hargue Hubert L R C P Ralph Kauntze M B Camb, George Marcus Komrower M B Manc, Eliot Digby Mackworth M B Aberd, Ram Prakash Malhotra M B Punjab, Emanuel Miller L R C.P, Robert Mowbray, M D Durh., Frank Haddow Redding, M B Lond and John Dalrymple Willis M B N Z.

Licences to practise were conferred upon 220 candidates (204 men and 16 women) who have passed the final examination of the Conjoint Board and have complied with the by laws of the college The following are the names and medical schools of the successful candidates —

Ghulam Ahmad Lond A C Anderson, St Bart's, F C Appleton St. Thos G A Arthurs, Lond D W R Ashby, Westminster; John Aspin Camb and Middlesex Harold Asser Lond, D M Baker Camb and St Thos, G O Barron, Camb and Middlesex T H Bassett, St Bart's I S Beirer St. Bart's R C S Benson Lond W C Berriman Manc. F B Berry Guy's A C Bingold Lond

F T Birkinshaw, Birm and Univ Coll ; P H Birks, Guy's, St. J M C Birt, St Thos , M R Blair, Guy's ; R A Blair, Lond , P J Blaxland, St Mary's , J A Bowen-Jones, Guy's ; E S Brawn, St Mary's , W E Bryan, St Bart 's ; M M Bull, Camb and St Bart 's ; N F E Burrows, Oxfd and Middlesex ; J R Caldwell, St Thos ; K P S Caldwell, Camb and St Mary's ; J A Campbell, Camb and St Thos , John Carter, Lond ; P J. R Chalon, St Mary's ; J H O Chance, Birm ; P T Chopping, St Thos ; Nancy G Clegg, Leeds ; P U Colyer, St Thos ; C A G Cook, Guy's , Ewart Cook, Leeds , E L Corsi, St Bart 's ; J M Couchman, Oxfd and St Thos ; H H Crabb, Guy's , J D Craig, St Mary's , J V Crawford, Lond ; G R Crawshaw, Manc , J J Crehan, Sheff ; J L S Cresswell, St Mary's ; A P Curtin, St Bart 's , D O Davies, Lond ; Dilys L Davies, Cardiff ; I M Davies, Cardiff ; P H Davies, Manc , R M Davies, Westminster, Nathan Dembovitz, St Geo ; R G Denniss, Leeds ; Raoul de Senneville, St Bart 's ; H E de Wardener, St Thos , N J Dhondy, Bombay ; Benjamin Djanogli, Guy's ; William Donkin, St Bart 's , J A Duncan, Birm ; R G Eager, Oxfd and St Thos ; F H Edwards, Westminster ; W G C Edwards, Middlesex ; T K Elliott, St Mary's ; E M Elmhirst-Baxter, St Bart 's , J F Erskine, Charing Cross ; R H Evans, Guy's ; G. R Fearnley, St Thos , C M Fletcher, Camb and St. Bart 's , Richard Fletcher, Camb and St Geo , K H P Flew, St Thos , Mita Frost, Roy Free , J W Garraway, Middlesex ; M O J Gibson, Camb and St Thos , J C Gillett, Oxfd and Middlesex ; Barbara Girling, West Lond ; H E Gleave, St Mary's ; F S Gorrill, Charing Cross , L B Gunn, St Thos , J T A Hackett, St Bart 's , R H V Hafner, Univ. Coll ; Raymond Hanbury-Webber, St Bart 's ; Jacob Harders, Lpool ; E. Y Haroun, St Geo , K L. Hart, St Thos ; M F Hart, Guy's , G G Hartill, St Bart 's , C F. Hawkins, Guy's ; F A Henley, Middlesex ; Jack Herbert-Burns, Univ Coll ; J B Heycock, St Thos ; P F J Hickinbotham, Birm , A C S Hobson, St Mary's ; T. P. Hopkins, Cardiff , W. J T. Howard, Guy's ; Consitt Huddlestone, Durh , C W A Hughes, Univ Coll ; J F Hughes, St Bart 's ; J P Irwin, St Thos ; I M Jackson, Camb and Lond , Beryl C James, Roy Free , B A E Johns, Birm ; Dorothy H Johnston, Roy Free ; R D C Johnstone, St Thos , A K Jones, St Thos ; Eleanor M Jones, Cardiff , W A Jones, Guy's , F P Kay, Royal Halifax Infirmary ; R M Kennedy, Northwestern Univ. and West Lond , J. B Kershaw, Lond , Robert Kershaw, St Bart 's , R A King, Lond , M H Kinmonth, St Thos ; W H Kirkcaldy-Willis, Camb and Lond ; A H. Knight, Guy's ; Dorothy M S Knott, Roy Free , D B Kulkarni, Bombay and Lond ; H C Lanchester, St Thos , David Lawrence, Univ Coll ; Mary Laws, Univ Coll , Joyce Leach, Manc ; Geoffrey Levy, Westminster , J S Lillicrap, St Bart 's ; J. J H Lowe, Durh ; J. N Macdonald, Oxfd and Lond ; G C Mackay, St Bart 's , A R C Margetts, King's Coll ; R E D Markillie, St Thos ; I H Marrable, St Thos ; G R. Marshall, Lpool , D R B Mathias, Cardiff , Richard Mawson, Univ. Coll , D E Meredith, Guy's ; A E W Miles, Charing Cross ; M. D Milne, Manc , Shivaprasanna Misra, Calcutta ; J B Mitchell, St Mary's , Mary L Mittell, Roy Free ; S V. Mody, Bombay ; N C Mond, Univ Coll ; Margaret J Morgan, Roy Free , E P Morley, Camb and Lond ; Donald Munro-Ashman, St Mary's , John Murray, Middlesex , J. C H. Nicolas, St Bart 's , Frederick Noronha, Bombay , Mary B Oakden, Manc ; A M Ogilvie, Camb and Lpool , S P S Oswald, St Thos , Kenneth Page, St Mary's ; K. R Pallot, St Bart 's ; L M Pearce, St Geo , Sylvia Pearson, Birm , W H Peek, Westminster , J. L Penistan, Lond , E A Penn, Charing Cross ; J H Penrose, St Thos , P E Perceval, Camb and Lond , Freda M Pescatore, King's Coll , C P Petch, Camb and St Thos , A K Pittman, Charing Cross ; M J Pleydell, St Bart 's ; Benny Pomerantz, Westminster ; H I H Porcher, Univ Coll , Felix Post, St Bart 's ; F L. Potter, St Bart 's ; R W K Purser, St Thos , P R Rainford, West Lond ; G J F Rees, Guy's , I B Rees-Roberts, Univ Coll , B W Richards, St Bart 's ; D G B Richards, Birm , J R. E Richardson, Guy's ; Frances M Roberts, Roy Free , J D. Rochford, St Bart 's ; Nancy G Rogers, Cardiff , Ernst Rosenbaum, Middlesex , W H S St John-Brooks, Camb and St Thos ; Mary Savory, Univ Coll , Sidney Shaw, Charing Cross ; W A de C Shearman, Guy's ; M A Shellim, Guy's , V S Shuttleworth, St Bart 's , M R J Snelling, St Bart 's ; R J O Speirs, King's Coll ; J R Squire, Camb and Univ Coll ; H N D Stephens, St Mary's , P C Steptoe, St Geo , A M Stevens, Camb and Charing Cross , I M G Stewart, Guy's ; J E T Strickland, Lond ; W E Swanston, St Geo , Geoffrey Tabuteau, Middlesex ; J A Taylor, Sheff ; E L Tee, Lond , J E Tees, Charing Cross , J L Temple, St Bart 's , A S Thenuwara, Cardiff ; K B Thomas, Charing Cross ; D H Thompson, Birm , J I Timothy, Westminster , Dhavi Boonchuay Tongbai, St Bart 's , E H Travers, Edin ; Dhavi Tumrasvin, Guy's ; E W Turner, St Bart 's , L H Turner, Middlesex ; R. S Turner, Lond. , F H Tyror, Camb and Middlesex ; H G Vyse, St. Thos , L D Walker, Middlesex ; R J S Walker, Lpool ; K H Walter, Guy's ; Martin Ware, St Bart 's ; C K Warrick, St Bart 's ; Peter Watts, Univ Coll , J W S Welbon, St Mary's ; R G S Whitfield, Middlesex ; H W. Whittingham, Camb and Middlesex , Richard Wilson, Camb. and St Thos. , and P B Woodyatt, Middlesex

Diplomas in anæsthetics were granted to the candidates named in our issue of April 22 in the report of the meeting of the Royal College of Surgeons.

Diplomas in tropical medicine and hygiene were also conferred jointly with the Royal College of Surgeons, upon the following candidates :—

A C E Cole, W G Davidson, S M. Desai, A M Dimyan, W. R M Drew, Adalberto Gomez, Munir Grais, H P. Gunetilleka, A. J Haddow, G M. Hargreaves, J K Hunter, J S R. Kumarakulasinghe, J H McDonald, Sosa Matthew, S K. Mufarrij, K P G Nayar, H B Patil, E P Rigby, P A Shah, D G Snell, W. A Thomas, S C Thurai-Rajah, C M Vannisegaram, D P Viljoen, C C Warnesuriye, O G Weerasinghe and S C Wright.

Prof. J. W. McNee was re-elected a representative of the college on the executive committee of the Imperial Cancer Research Fund and Dr. Reginald Hilton representative on the scientific advisory committee of the Radium Institute and Mount Vernon Hospital. Prof. W. W. D Thomson was appointed a delegate to the 25th annual conference of the National Association for the Prevention of Tuberculosis at Belfast (June 29 to July 1)

Scottish Conjoint Board

The following candidates having passed the final examination of the board were on April 29 admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow :—

William Anderson, G L Basak, S S Basta, C H Boyd, William Briggs, A A. Brown, Caroline M Brown, Gertrude M Brown, Hyman Chartock, C N Dhlamini, F L Fung, W F H Gibson, L N Gitzelter, Phoebe T Goggin, Nathan Goodman, M F H Griffith, E J Guller, H L Hart, Murugesu Kandasamy, Marcus Langman, F G Lassalle, John London, R W McClements, G W R MacGregor, Mary P Maclean, G R. P MacLeish, S S Molema, John Morkan, S G Paletz, J A Perpoli, P A M Robertson, W S Schram, Simeon Siegel, H S. V Smith, Ali Tawfic, Abraham Unger, and B N Young

The following graduates of recognised universities having passed the final examination were also admitted licentiates of the colleges and the faculty .—

Paul Baer, S F Berndt, Wolf Elkan, Rudolf Freudenberg, Gerda Friedmann, A A Malik, Willie Mayer Gross, and R P. M Regnault

Hospitals Day

The voluntary hospitals of London are holding their Hospitals Day this year on May 9 in inner London and on May 13 in outer London. An anonymous donor has offered to add sixpence to every shilling collected in the streets On May 8 Lord Luke, chairman of Hospitals Day, will open a hospitals exhibition at Charing Cross underground railway station Offers of help should be made to Lord Luke at 36, Kingsway, W.C 2.

Charterhouse Rheumatism Clinic

A medical meeting will be held at this clinic, 56, Weymouth Street, London, W 1, at 8 30 P M , on Wednesday, May 17, when Mr J. S. Ryan and Dr Raymond Greene will speak on the endocrine aspect of rheumatism. Dr. H. Warren Crowe will show a film demonstrating postural exercises, and Dr. S. Gilbert Scott a film on spondylitis Members of the medical profession are invited to attend.

Medical Sickness, Annuity and Life Assurance Society

At the annual general meeting of this society, held at its offices, 300, High Holborn, London, W C 1, on April 25, Dr. F. C. Martley, chairman of directors, presented the annual report The past year, he said, had been exceptionally difficult, but progress could nevertheless be recorded on every side of the society's work. The premium incomes of the life-assurance and sickness funds were now £134,120 and £123,508 respectively, the latter showing a record increase during the year The amount paid in benefit in the sickness fund had dropped from £61,222 to £59,627, chiefly because there was no universal epidemic of influenza The total funds of the society had increased by £203,344 and now stood at £1,790,000 As regards investments a steady flow of money was being invested in practices and houses, and a stage had been reached at which substantial sums were being annually repaid.

After the directors' report and balance sheet had been adopted, the two retiring directors, Dr. de Bec Turtle and Mr. Lancelot Bromley, F R.C S., were re-elected, and to fill the vacancy caused by the death of Mr. W. H Dolamore, Mr. C P. G Wakeley, F.R C S , who had already been coöpted by the board, was elected Approval was given to a recommendation for the payment of an interim bonus on all with-profit policies for permanent sickness and accident insurance and life assurances becoming claims during the year ending Dec. 31, 1939.

Mr Arthur Miller, honorary surgeon in charge of the ear, nose and throat department of the French Hospital in London, has been elected a corresponding member of the French Society of Otolaryngology

Kensington Medical Society

Lord Horder's address to this society, which was to have taken place on May 10, has now been postponed to June 14 Lord Horder will speak on the mental aspects of physical disease

Guy's Hospital

On Monday, May 8, at 5 P M, Dr W Randolph Lovelace of the Mayo Clinic will give a lecture in the medical school of this hospital He will speak on the use of high concentrations of oxygen and of helium and oxygen mixtures

Royal Society of Arts

On May 8, 15, and 22, Prof E C Dodds will deliver three Cantor lectures to this society He will speak on modern chemistry, modern medicine, and modern food The lectures will be held at 8 P M in the house of the society, John Street, Adelphi, London, W C 2

Research in Encephalitis

The foundation of the advancement of encephalitis research, at the University of Berne, offers prizes to workers in that field Particulars will be found in our advertisement columns

London (R.F H) School of Medicine for Women

It is announced that a royal charter was granted to this school on Dec 9, 1938 The school was founded in 1874, and in 1898 was registered as an association incorporated under the Companies Acts

Road Accidents in Ireland

An official return of the road accidents in the area under the control of the government of Ireland in the year 1938 has recently been issued There were 221 persons killed and 5558 injured With the exception of the year 1933 the total number of persons killed or injured has for many years shown an upward tendency Of pedestrians 90 were killed and 1881 injured Of pedal cyclists 80 were killed and 1778 injured In the opinion of the police, on whose reports the return is based, 13 8 of the accidents were due to pedal cyclists, 11 7 to pedestrians, and 51 3 per cent to vehicle drivers The chief causes of motor accidents were excessive speed, 965, of which 33 were fatal, failing to keep the right side of the road, 660, of which 17 were fatal, improperly overtaking, cutting-out, &c, 751, of which 7 were fatal, coming from one road into another carelessly, 1191, of which 4 were fatal The influence of alcohol was considered responsible in 101 accidents, of which 3 were fatal While the figures for 1938 showed an increase of 12 fatally injured and 1311 injured over the figures for 1937, there was an increase of 4035 motor vehicles on the roads from the earlier year to the later

Scottish Association for Mental Hygiene

The Scottish Association for Mental Welfare was formed in 1922 at the request of the General Board of Control for Scotland as a voluntary body to supervise the welfare of defectives not in institutions through care committees, committees for home visitation and employment centres throughout the country In 1929 this work, which was confined to dealing with defectives was extended to deal with mental hygiene in the non-defective community as part of a world wide mental hygiene campaign originated in the United States The aims of this section were directed chiefly to propaganda in order to increase public awareness of the problems of neuroses and early psychoses and to foster the utilisation of psychiatric clinics throughout the country In 1931 the Scottish Child Guidance Council was formed as a separate body and in May, 1938, these two bodies amalgamated to form the Scottish Association for Mental Hygiene which now represents the unification of activities directed towards mental defect, mental hygiene, and child guidance Local authorities medical educational, and social bodies are represented on the association and any interested person may also join Further information may be had from the secretary, 23 Eglinton Crescent, Edinburgh

Air Commodore William Tyrrell and Air-Commodore A S Glynn have been appointed honorary surgeons to the King, and Group Captain G S Marshall and Group Captain H L Burton honorary physicians to the King

Patent Medicines and the Budget

At a council meeting of the Pharmaceutical Society of Great Britain on Wednesday last the president said that the Government's proposed removal of the Medicine Stamp Duty and Patent Medicine Licence Duty would encourage abuses that Parliament intended to discourage when it imposed a vendor's tax 150 years ago "I cannot believe," he said, "that the Government would desire to remove every vestige of restriction upon the sale of self prescribed medicines at present subject to the acts" The effect of repeal of the duty would be to encourage a return to secret remedies, to promote the use of medicines far beyond the needs of the community, and to divert to the untrained and unqualified vendor a greater proportion of the handling of drugs

Congress for Life Saving

The fifth International Congress for Life Saving and First Aid to the Injured will be held at Zürich and St Moritz from July 23 to 28 The chairman of the British committee is Mr Thomas Stowell, F.R C S, and the secretary, Mr G L Perry, may be addressed at 14, Hobart Place, London, S W 1

National Fitness Council for England and Wales

At a meeting of this council held on May 2 at the Ministry of Health, Whitehall, Lord Dawson said that the subcommittee set up to determine the criteria of fitness had agreed upon the following definition for the purposes of the National Fitness Council "Fitness is a state of physical, mental and spiritual wellbeing in which the individual can perform and enjoy the activities of his leisure and working hours"

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on May 1 Prof T K Monro was admitted to the honorary fellowship In introducing the new fellow, Dr John Henderson, the president, said "Dr Monro is well known to you all as a physician and teacher of distinction, a wise councillor and an ex president of this faculty, a medical historian, and an author whose work has not entirely been confined to the field of medicine He has already been honoured by his own university who conferred on him the honorary degree of LL D"

Devon and Exeter Cancer Fund

At the annual meeting of the trustees of this fund Dr Charles Wroth, the medical officer, stated that the amount and type of work carried out in the past year in the radiation treatment of malignant disease was practically identical with that of the preceding two or three years, and it seemed unlikely, for the present, that any important change would take place in this aspect of attack Minor variations in technique might improve results, but it seemed that standardisation of the accepted methods was taking place, and that a more accurate knowledge of those conditions likely to benefit from radiation methods was being gained

Radiesthesia

Dr Ernest W Martin and Dr W Guyon Richards inform us that a Medical Society for the Study of Radiesthesia has been founded and will meet in London at 8 30 P M every third Thursday in each month "We desire," they say, "to study not only radiation from the human body, but electrical conditions generally—the action of mind on mind and allied phenomena" After referring to the use of measuring apparatus, including "those developed from Abrams's discoveries, Boyd's emanometer, divining rod and pendulum" they state that the membership is confined to qualified medical men, though physicists and others will be asked to attend as guests Particulars may be had from Dr Richards at 12, Park Crescent, W 1, where the meetings will for the present be held

OBITUARY

ROBERT ALFRED BOLAM

KT., O.B.E., M.D. DURH., LL.D., F.R.C.P.

Sir Robert Bolam died at his home at Newcastle-on-Tyne on April 28 at the age of 67 His death is the greater blow to his friends that it was unexpected; his energy had seemed so little subject to physical limitations. Natural ability combined with tenacity of purpose and business acumen brought him success at every stage of a career which included the vice-chancellorship of Durham University, the chairmanship of council of the British Medical Association, and the chair of business at the General Medical Council

Robert Alfred Bolam was born in 1871, the son of John Bolam, a Newcastle chemist, and was educated at Rutherford College, graduating at the University of Durham medical school in 1896 with the gold medal in medicine He then worked with W. D. Halliburton at King's College, London, returning to Newcastle to demonstrate practical physiology and pathology, becoming joint lecturer with Sir Thomas Oliver at the college of medicine, and ultimately succeeding him as its president His scientific equipment served him in good stead in the self-imposed task of reorganising the college museum, in which he was assisted by G. G Turner, using for the first time the Kaiserling method. He soon became assistant physician to the Royal Infirmary and in 1907 succeeded James Limont as physician to the skin department. During the late war he was in command of the Wingrove Hospital, which was the venereal-disease department of the 1st Northern General Hospital, and when this clinic was merged with the skin department of the infirmary he took charge of both until his retirement in 1931. Not content with lecturing on physiology, pathology and then dermatology he was also lecturer on medical jurisprudence and held the chair at the school in that faculty. In 1927 he followed R Howden as registrar of the college of medicine, becoming president of the college in 1934. On the academic side he was senator and pro-vice-chancellor in 1935 and vice-chancellor in 1936–37. But this did not prevent him from acting as chairman to a departmental committee on the training of midwives or as a governor of the British Postgraduate Medical School.

[Walter Scott

This bare outline of Bolam's career in his home town needs something to be added of the personal impression he made there. In the course of an intimate letter Sir Thomas Oliver writes: "As the oldest member of the college of medicine and one who had known Robert Bolam from his boyhood, I can express not only my own sense of personal deprivation, but of the great loss his comparatively early death is to medicine generally and to this school in particular He was a remarkable technician, had good expository gifts and was an adept chemist, so that when I was carrying out experiments on occupational maladies and particularly an inquiry into the cause of death in electric shock he proved himself a most capable and suggestive co-adjutor Later he became an outstanding man in any assembly; he made an excellent chairman, for he had a wide knowledge of procedure He was slow to speak until he had listened to the opinions of others, but when he had anything to say he had the courage of his convictions as well as the ability to express and sustain them. During the building of the old college in Northumberland Road his knowledge of the requirements of physiological laboratories and class-rooms for the various departments rendered great assistance to the architects and it was his friendship with Sir Arthur Sutherland that led to the gift of £100,000 which provided our new school. Honour after honour kept pouring in upon him, and although some of them demanded personal service in return he never deviated from the path of rectitude in regard to all his commitments, but the work was arduous and gradually told upon him Despite increasing myocardial weakness he was able to discharge with his usual brilliance and courtesy the duties incidental to the royal visit on Feb. 26 The end came from sudden cardiac failure. His is a record of a life fully lived, and of work well done"

It was in his early forties that Bolam became associated with the central administration of the British Medical Association. He became a member of the representative body in 1913 and a member of the council in 1915. Five years later, during the annual meeting at Cambridge, he was elected chairman of council in succession to J. A. Macdonald. It was a matter of astonishment to Londoners that he was able to combine active practice in Newcastle with unwearying attention to the duties of this chairmanship. Mr. Bishop Harman writes: "I have served with Bolam on many councils and committees, and I do not think there has ever been any man with whom I have come in close contact whose personality has been more human, more influential, and more effective than his. There is still in my mind a vivid impression of my first knowledge of him. It was at a meeting of the representative body of the British Medical Association. There were under consideration the proposals of the Government for the organisation of the treatment of venereal diseases. One of the items of those proposals was a provision that '606,' or its equivalent, should be supplied free of charge to all registered medical practitioners who could give evidence of their competency to administer it. There was a vehement repudiation from speaker after speaker of the qualification attached to the provision. Every registered medical practitioner, it was asserted, was competent to do necessary medical work, and the qualification was an infringement of the statutory powers of the General Medical Council and the Medical Acts The trend of the debate was such that it appeared to be certain that the offer of the Government would be rejected. Then Bolam got up. I think there were few who knew him then But they knew him well in the course of the next few minutes. In the simplest of terms he gave the meeting a clinical lecture on his personal experiences of the difficulties and dangers of the administration of this treatment, which that time was relatively new. It was the shorte and the most effective clinical lecture I have ever heard Its effectiveness was demonstrated by the immediate acceptance by the meeting of the proposals of the Government including the qualifying clause In all his speaking he showed the same gentle yet convincing persuasiveness He spoke to his audience as man to man There was no rhetoric of declamation or artificial eloquence in his words or manner, but the true rhetoric of effective speech There was no one who listened to him who was not certain of his complete sincerity, and his words were correspondingly weighty

"With his work for the British Medical Association I was closely associated, and I can bear personal testimony to its great value It was at the first normal annual meeting after the end of the Great War that he was elected chairman of the central council, and for seven years, during the heavy work of reconstruction, he gave the fullest service to the association The demand made upon his time by attendances at meetings in London was such that I often thought he slept more often in the railway train than at his home Besides his power for work and the acuteness of his judgment, he had the gift and the manners of a dignified courtier It was a real pleasure to witness the naturalness and orderliness with which he received King George V and Queen Mary when they opened the new B M A House in Tavistock Square, and when on the same day he received the Archbishop of Canterbury for the dedication of the great gates to the court of honour

"Finally, I would like to give my personal testimony to the services he rendered to the General Medical Council. The fact that he, a north country consultant and specialist, was elected by the great bulk of the profession who are naturally in general practice is in itself eloquent testimony to the impression he made upon his colleagues As chairman of business he held an office that entailed delicate decisions the difficulty of which only members of the council could assess There were many who felt that the time might come when he would be called upon to undertake still more responsible work for the council

"Members of his family often accompanied him to annual meetings of the association, and our sympathies go out to Lady Bolam, his son Dr R Mason Bolam, and his two daughters"

The President of the General Medical Council writes "Sir Robert's death is a heavy blow to the council, of which he had been a member since 1920, first as a direct representative, and since 1928 as representative of the University of Durham Since 1932 he had been elected year by year to be chairman of business, and I do not think any president ever had a more efficient aide de camp He served at one time or another on almost all the committees of the council, and left the mark of his business-like mind on each of them"

NORMAN JAMES MACDONALD

B A CAMB, M R C S

Dr Macdonald, who died in London on April 24 at the age of 44, was the only son of the late Mr C J B Macdonald, for many years agricultural correspondent of the *Times* He was educated at Pembroke College, Cambridge, and St Bartholomew's Hospital, where his study was interrupted by service as surgeon sub lieutenant in the Royal Naval Volunteer Reserve Qualifying in 1919 he became ophthalmic house surgeon at the hospital and later house surgeon to Mr L Bathe Rawling Even then his physique was not good, and Mr Rawling recalls the courage and determination which overcame his disabilities Although possessing decided opinions and quite fearless in their expression he was popular with his colleagues, who found him conscientious in his work, kind and considerate to his patients and courteous to everyone When his hospital appointments were finished he went to the American School of Osteopathy at Kirksville, Missouri, and qualified there as a doctor of osteopathy, and it was largely on osteopathic lines that he had practised in London for the past fifteen years, making occasional contributions to the medical press on the influence of spinal manipulation and adjustment A few years ago his name came before the public through his criticism of the telephone service, which had failed to respond at night to an urgent call to notify a fire in Wimpole Street, and his action at this time was followed by the introduction of the new emergency call of 999

Dr Macdonald leaves a widow

Medical Diary

May 8 to May 14

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1
TUESDAY
Therapeutics and Pharmacology 4 30 P M, general meeting Mr C. Rimington, Ph D Porphyrins and Their Relation to the Metabolism of Blood Pigments Mr G Brownlee Porphyrin Excretion Following Antipyretics Dr N Hamilton Fairley Methæmalbumin
Psychiatry 8 30 P M, annual general meeting Dr W Russell Brain, Dr H V Dicks, and Dr I A Carver Medicine and the Law in Relation to Drug addiction
WEDNESDAY
Proctology 8 30 P.M, Mr J P Lockhart Mummery Hæmorrhagic Purpura Complicating Excision of the Rectum Dr Cuthbert Dukes Ossification in Rectal Cancer Mr Harold Edwards Diverticula of the Small and Large Intestine Mr E G Muir Abdominal Resection for Rectal Carcinoma Mr Maurice Lee Treatment of Partial Prolapse of the Rectum by Perirectal Injections of Sylnasol Mr W C Barber Perianal Ulceration of Unknown Ætiology
FRIDAY
Clinical 5 30 P M, annual general meeting

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W 1
MONDAY—8 P M, annual general meeting 8 30 P.M, Prof J A. Ryle Clinical Sense and Clinical Science (annual oration)

HARVEIAN SOCIETY OF LONDON
THURSDAY—8 30 P M (26, Portland Place, W 1), Mr L R Broster Recent Advances in the Surgery of Adrenal Cortex

HUNTERIAN SOCIETY
MONDAY—8 30 P.M (Simpson's Restaurant Bird in Hand Court, Cheapside E C 2), annual general meeting Mr C Ainsworth Mitchell, D.Sc. Identifications in Criminology

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY
THURSDAY—8 30 P M (11, Chandos Street W 1) Dr Desmond Curran *Escape into Drugs and Alcoholism*

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL SOCIETY OF ARTS, John Street Adelphi W C 2
MONDAY.—8 P M Prof E C Dodds Modern Chemistry, Modern Medicine, and Modern Food (First Cantor lecture)

TAVISTOCK CLINIC Malet Place, W C.1
MONDAY—6 P.M, Dr Emanuel Miller Theories of Instinct (I)
WEDNESDAY.—3 P.M, Dr Cedric Shaw Hyperthyroidism 4 30 P.M Dr H Crichton Miller Anxiety
THURSDAY—6 P.M, Dr Laura Hutton Adolescence

INSTITUTE OF PSYCHO ANALYSIS, 96, Gloucester Place, W 1
TUESDAY.—8 30 P M, Mr R Money Kyrle Varieties of Group Formations

GUY'S HOSPITAL S E 1
MONDAY—5 P M Dr W Randolph Lovelace (Mayo Clinic) The Use of High Concentrations of Oxygen and of Helium and Oxygen Mixtures

ST MARY'S HOSPITAL W 2
TUESDAY—5 P.M. (Institute of pathology and research), Dr V D Allison The Mode of Spread of Acute Streptococcal Infections

WESTMINSTER HOSPITAL Horseferry Road, S W 1
TUESDAY—5 P M Dr W E Lloyd: Lymphosarcoma. Mr F C Ormerod: Carcinoma of the Larynx

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12

TUESDAY.—4 30 P M, Dr C M Hinds Howell: Syphilis of the Nervous System

WEDNESDAY —Noon, clinical and pathological conference (medical) 2 P.M, Dr T C Stamp The Bacteriology of Acute Respiratory Infections—Pneumonia and Whooping-cough 3 P M, clinical and pathological conference (surgical) 4 30 P M, Prof J McIntosh: Cancer

THURSDAY —2.15 P.M, Dr Duncan White: radiological demonstration 3 30 P M, Mr Wilfred Shaw: Neoplasms of the Ovary, including Endometriosis

FRIDAY —2 P M, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M, Mr Cecil Joll Toxic Goitre

Daily, 10 A M to 4 P M, medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W C 1

THURSDAY —2 P M, Dr M Hynes: Ætiology of Gastro-enteritis 3 P M, Mr Charles Donald: Surgical Tuberculosis in Childhood

Outpatient clinics daily at 10 A M and ward visits at 2 P M.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W C 2

MONDAY —5 P M, Dr W. N Goldsmith. Acneiform Eruptions

TUESDAY —5 P M, Dr Mitchell Heggs: Skin Affections of the Hands and Feet

THURSDAY —5 P.M, Dr W Griffith · Bullous Eruptions.

FRIDAY —5 P M, Dr. G Duckworth. *Psoriasis*

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W 1.

MONDAY to SUNDAY —ST PETER'S HOSPITAL, Henrietta Street, W C 2, all-day course in urology —ST JOHN'S HOSPITAL, 5, Lisle Street, W C 2, afternoon course in dermatology (Open to non-members)—MAUDSLEY HOSPITAL, Denmark Hill, S E 5, afternoon course in psychological medicine —BROMPTON HOSPITAL, S W 3, Tues and Fri, 5 15 P M, M R C.P course in chest diseases — INFANTS HOSPITAL, Vincent Square, S W 1, Sat and Sun course in children's diseases

MANCHESTER ROYAL INFIRMARY

FRIDAY —4 15 P M, Dr P. B Mumford: demonstration of skin cases

HONYMAN-GILLESPIE LECTURE, EDINBURGH

THURSDAY —4 30 P M (Royal Infirmary), Mr J J. M Shaw· Cancer of the Mouth and Jaws.

Appointments

BOND, S A, M B Glasg, assistant resident medical officer, attached to the obstetrical, gynæcological and surgical unit at Park Hospital, Davyhulme, Manchester

COVENEY, MARGARET F, M B Sheff, D P H, assistant medical officer of health for Edmonton

ELLIOTT, R W, M B Sheff, resident medical officer at the Leicester City Isolation Hospital and Sanatorium

GHEY, P H R, M Chir Camb, F R C S, hon surgeon to Addenbrooke's Hospital, Cambridge

LANGLEY, G F, Ch M Brist, F R C S, medical superintendent at the Borough General Hospital, Ipswich

REES, E L, L R C P E, assistant medical officer at Wonford House Hospital, Exeter

REYNOLDS, S J R, M B Camb, D M R E, hon assistant radiologist to the Prince of Wales's General Hospital, London

ROBERTS, C T, M B Leeds, junior resident medical officer at Park Hospital, Davyhulme, Manchester

ROBERTS, LOUIS, M B Leeds, assistant medical officer at Wakefield Mental Hospital

ROSS-KEYT, F D, M B Aberd, D P H, medical officer of health for Thornaby-on-Tees and the rural district of Stokesley, and assistant to the medical officer of health for the North Riding of Yorkshire

Examining Surgeons under the Factories Act, 1937. Dr J B **YOUNG** (Garforth District, York, W R); Dr J W **JAGO** (Hathersage District, Derby); Dr R **OKELL** (Winsford District, Chester)

Vacancies

For further information refer to the advertisement columns

Aberdeen University —A W Garden fellowships, each £200

Acton Borough —M O H and school M O, £1000

Albert Dock Hosp, E 16 —Asst. surgeon in general surgery

Ashton-under-Lyne, Lake Hosp and Darnton House Institution — Jun res M O, at rate of £225

Barnes Borough —Asst M O H, £500

*Battersea General Hosp, Battersea Park, S W.*11 —Cas O, at rate of £60

Belfast, Ministry of Home Affairs for Northern Ireland —Medical inspector, £750.

Belfast, Royal Victoria Hosp —Orthopædic registrar

Birmingham and Midland Eye Hosp —Res surg O, £200

Birmingham Royal Cripples Hosp —Res H S, at rate of £200

British Postgraduate Medical School, Ducane Road, W 12 — Assistantship in morbid anatomy and assistantship in clinical pathology, each £300.

Burnley County Borough —Asst M O H, £600

Cardiff, King Edward VII Welsh National Memorial Association Asst res M O for North Wales Sanatorium, £200

Chesterfield and North Derbyshire Royal Hosp —H.S to ophthalmic and ear, nose, and throat dept, at rate of £150.

Colchester, Royal Eastern Counties' Institution, &c —Asst M O, £400.

Colonial Medical Service.—M O 's

Derby, Derbyshire Royal Infirmary —H S for general surgery, £150

Dudley, Guest Hosp —H S, £150

Halifax Royal Infirmary.—First H S, at rate of £200

Hampstead General Hosp, Haverstock Hill, N W 3 —Res cas surg O for outpatient dept., at rate of £100

Hertford County Hosp —Hon consulting physio-therapeutist to dept of physical medicine Also H S, at rate of £200

Hosp for Sick Children, Great Ormond Street, W C 1 —Res med asst and clin pathologist, £125

Infants Hosp, Vincent Square, Westminster, S W 1 —Hon clin assts Also H P., at rate of £100

Kingston-on-Thames —M O for Bentalls Ltd, £600

Leamington Spa, Warneford General Hosp —Sen res surg O, £20

Leeds, Menston Mental Hosp —Sen M O, £650

Liverpool University and Maternity Hosp —Res. obstet asst and tutor, £250

London Chest Hosp, Victoria Park, E 2 —H.P and H S, at rate of £160 and £100 respectively

London County Council —Asst M O. (class I), £350 Also asst M O 's (class II), each £250

London Hosp, E 1 —Clin asst. in X-ray dept, £100 Also anæsthetist to dental dept, £25

London Jewish Hosp, Stepney Green, E 1 —Res M O and H P., at rate of £150 Also H S and cas O, each at rate of £100

Manchester, Christie Hosp and Holt Radium Institute, Withington —Visiting anæsthetist

Manchester, County Mental Hosp, Prestwich —Locum tenens M O, 7 guineas per week

Manchester, Saint Mary's Hosps —Res anæsthetist, £100

Manchester City —Two res asst M O 's for Booth Hall Hosp. and res asst M O. for Withington Hosp, each at rate of £200

Manchester Royal Infirmary —Jun asst M O for Barnes Convalescent Home, at rate of £150 Also hon asst radiologist

Manchester University —Pilkington fellowship in cancer research £300

Metropolitan Hosp, Kingsland Road, E 8 —Cas. O and res anæsthetist, £100

Middlesex County Council —Various appointments, £1000 per annum to 3 guineas per session

Milford, Surrey County Sanatorium —Jun asst res M O, at rate of £250

Miller General Hosp, Greenwich Road, S E 10 —Two cas O's, each at rate of £150 Also H P and H S, each at rate of £100

Newton-le-Willows and Golborne Urban Districts —M O, £800.

Nottingham, Children's Hosp —Res H S, at rate of £150

Nottingham General Hosp —Res cas O, at rate of £150

Oxford, Warneford Hosp for Mental Disorders —Locum tenens, 7 guineas per week

Port Elizabeth, South Africa, Provincial Hosp —Jun radiographer, £145

Preston and County of Lancaster Royal Infirmary —Cas H S, at rate of £150.

Reading, Battle Hosp —Res asst M O, £300

Rochester, St Bartholomew's Hosp —H S and H P, each at rate of £150

Royal Cancer Hosp, Fulham Road, S W 3 —Surg reg, £150 Also H S, at rate of £100

Royal London Ophthalmic Hosp, City Road, E C 1 —Pathologist and curator, £650 Also asst surgeon

Royal Naval Medical Service.—M O 's

Royal Northern Hosp, Holloway, N 7 —H S, at rate of £1 Also consulting physicist

Ryde, Royal Isle of Wight County Hosp —H P, £130

Southampton, Royal South Hants and Southampton Hosp — H.P, at rate of £150

Southend-on-Sea General Hosp —H P, H S, and cas O, each at rate of £100

Stepney Metropolitan Borough —Tuberculosis officer and asst M O H, £750

Stoke-on-Trent City Education Committee —Asst school M O, £500

Sutton, Sutton and Cheam Hosp —Jun res M O, at rate of £10

Truro, Royal Cornwall Infirmary —Jun H S, £120

Twickenham Borough —Deputy M O H, £750

Walsall General Hosp —H S, at rate of £150

Warrington County Borough —Asst M O, £500.

West Ham County Borough —Med supt for South Ockend Colony, £900

West Hartlepool, Cameron Hosp —H S, £150

West Sussex County Council —Res med supt and asst. county M O H, £700

Wolverhampton Royal Hosp —H S for fracture and orthopædic dept, at rate of £100

Woolwich and District War Memorial Hosp, Shooters Hill, S.E 18 —Surg reg, £100

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Stratford-on-Avon (Warwick) and Montrose (Angus)

Westminster Hospital, Broad Sanctuary, S W 1 —In the advertisement which appeared in THE LANCET of April 22 and 29 inviting applications for the post of Part-time Chief Assistant and Registrar to the Radiological Department (Diagnostic) and Full-time Chief Assistant and Registrar to the Electrical and Irradiation Unit, the closing date for applications, through a printer's error, was shown as Saturday, May 27. This should have read Saturday, May 6, and all applications should be received by this date

COMPULSORY MILITARY TRAINING

UNDER the Military Training Bill, which on Monday was ordered to be printed, male British subjects between 20 and 21, with certain exceptions, are to apply for registration and thereafter are liable to be called up for training within twelve months Men ordinarily resident in the dominions or colonies, members of the regular forces and those who were before April 27, 1939, members of the reserve and auxiliary forces are exempt Anticipation or postponement of liability to be called up may be permitted if the Minister of Labour or a committee appointed by him to investigate cases of "hardship" sees good cause A conscientious objector may apply for provisional registration in a special register and will have to make an application to a local exemption tribunal stating whether he objects (*a*) to being registered in the milithry training register, (*b*) to undergoing military training, or (*c*) to performing combatant duties This local tribunal may confirm the registration as final or as conditional on the applicant performing work designated as of national importance, or it may direct that he shall be entered in the military training register as liable to be employed only in non-combatant duties, or without qualification. The Minister may appeal from this decision to a central tribunal but the applicant may appeal only if leave is granted or if the local decision is not unanimous After registration a man liable to be called up will be required to attend a medical board appointed by the Minister, who will pay such remuneration and allowances to members of this board and to consultant examiners as he may, with the approval of the Treasury, determine Persons undergoing examination will be paid travelling and other allowances, including compensation for loss of remunerative time Provision is made for compelling employers to reinstate employees, on termination of their training period, unless they are able to prove that it is not practicable Education authorities and governing bodies of universities and schools are required to furnish information about present or former male students During the initial period of six months' military training—to be followed by three and a half years in the militia or auxiliary forces—the man will be clothed, fed, and accommodated from military sources His pay and conditions of service during the period of service have yet to be decided Special allowances will be paid in case of need to wives and dependants

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THE MINISTER OF HEALTH AND SOCIAL SERVICES —At a luncheon of the Industrial Welfare Society on Friday the Minister of Health said that the provisional maternal mortality figures for 1938 showed a further reduction from 3 13 per 1000 births in 1937 to 2 97 in 1938 This was the lowest figure ever recorded in this country During the period 1927–37 the infant mortality rate had fallen from 70 to 58 and the tuberculosis death rate from 79 to 56 The toll of sickness upon industry remained, however, very great The gross total expenditure on benefits under National Health Insurance amounted in 1937 to £28 000,000 Industry, said Mr Elliot, had its own part to play in dealing with this problem, and he was glad to know that many firms had appointed doctors, nurses and other trained experts to watch over the health of their staffs He regarded this preventive work as of the greatest value He knew that enlightened employers were keen to keep abreast of every development in the scientific and medical field, and he called their attention to the problem of fractures, which had been the subject of an inquiry by an interdepartmental committee whose report was shortly expected Encouraging progress had already been made in the provision of up-to-date facilities for the treatment and aftercare of fracture cases, and he hoped that with the coöperation of all concerned more might yet be done

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 22, 1939

Notifications —The following cases of infectious disease were notified during the week Smallpox, 0, scarlet fever, 1407, diphtheria, 825, enteric fever, 16 (25 "expected"), pneumonia (primary or influenzal), 1270, puerperal pyrexia, 203, cerebrospinal fever, 51, acute poliomyelitis, 8, encephalitis lethargica, 5, dysentery, 21, ophthalmia neonatorum, 133 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on April 28 was 3143, which included Scarlet fever, 656, diphtheria, 615 (carriers 26) measles, 7 whooping-cough, 1029 puerperal fever 16 mothers (plus 10 babies) encephalitis lethargica, 303 poliomyelitis, 3 At St Margaret's Hospital there were 22 babies (plus 12 mothers) with ophthalmia neonatorum

Deaths —In 126 great towns, including London, there was no death from smallpox or from enteric fever, 5 (0) from measles, 3 (0) from scarlet fever, 20 (5) from whooping-cough, 18 (1) from diphtheria, 33 (9) from diarrhœa and enteritis under two years, and 91 (9) from influenza The figures in parentheses are those for London itself

Birmingham had 10 deaths attributed to influenza Swansea 7, Walsall 4 Luton 3, no other great town more than 2 Fatal cases of diphtheria were scattered over 13 great towns Birmingham reporting 4, Blackpool and Manchester each 2

The number of stillbirths notified during the week was 250 (corresponding to a rate of 31 per 1000 total births), including 36 in London

Births, Marriages and Deaths

BIRTHS

CARGILL —On April 18, at Halifax, the wife of Dr David Cargill—a son

CLARKE —On April 25 at Rangoon Burma, the wife of Captain Oswald Weir Clarke R.A.M.C —a son

GEIDT —On April 25, the wife of Dr David W Geldt, of Exmouth—a son

HAMILTON —At 39 Palmerston Place, Edinburgh on April 28, to Margaret (née Provan), wife of A J C Hamilton, F R C S, Inverness—a son

VAIZEY —On April 26 at Welbeck Street, W 1, the wife of Dr J Michael Vaizey—a daughter

WALTON —On May 1, at Norwich, the wife of Captain H C M Walton R A M C —a son

WHITE —On April 18, at St Mary's Hospital, W 2, the wife of Mr J A White, F R C S —a son

DEATHS

BOLAM —On April 28 at Newcastle-on-Tyne Sir Robert Alfred Bolam M D Durh, F R C P aged 67

CORNER —On April 23 Frank Corner, M R C S L R C P J P, aged 77 years of 29, Blanfield Road W 9 and the Royal Societies' Club London

DAVIES —On May 1, at Wrexham and East Denbighshire War Memorial Hospital John Edward Henry Davies D S O, M R C S lieut colonel R A M C

EDWARDS —On April 20, at Milford on Sea, Hants, Charles Reginald Edwards M R C S late of Jamaica aged 79

ORR EWING —On April 26, at Cairo, Geoffrey Orr Ewing, M B Melb

PENNY —On April 30 at Uckfield Sussex Edmund John Penny, M.D Brux, M R C S, L S.A late of Wolverton, Bucks, aged 7[illegible]

RUSHWORTH —On May 2, at Horsham, Frank Rushworth, M D Lond, aged 81

N B —A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

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"Censorship is very tempting, but I am against it It makes unreliable papers It makes discredited papers It makes dull papers I would rather have the criticism of a free press than the adulation of a kept press If I were a dictator the press flatterers would drive me mad"—Sir SAMUEL HOARE, speaking to the Newspaper Society, May 2

NOTES, COMMENTS, AND ABSTRACTS

THE PROTEINS OF THE CANCER CELL

In their paper on the chemistry of tumours, which we review in a leading article this week, Kögl and Erxleben[1] begin by discussing the process of malignant degeneration, pointing out that so many causes have been suggested—including growth stimulants, carcinogenic hydrocarbons and viruses—that it is widely doubted whether a common cause of cancer is to be found. They themselves think that cancer is essentially an abnormality of growth, and that its origin is to be sought in the cell itself. The difference between organised and disorganised growth cannot, they hold, be ascribed to changes in the nutritional circulation in the cell ; it lies rather in the utilisation of such substances and is related to the protein make-up of the cells, though hitherto no significant differences between the proteins of normal and tumour cells have been reported.

Chemical investigation has shown that the biological activity of substances is fundamentally changed, not only by structural alterations in the molecules, but also by apparently trifling steric changes ; for optical isomers may differ widely in their action The naturally occurring amino-acids, although differing in the sign of their optical rotation, have almost all been found to be members of the same steric series—viz , the *l*-series These have accordingly been designated the "natural" amino-acids. The only known exceptions are the *d* (+) proline from ergotinine and the *d* (−) glutamic acid in the specific immune capsular substance of the anthrax bacillus Kögl and Erxleben therefore thought it possible that stereochemical changes may be concerned in malignant degeneration, and with this idea have investigated the amino-acids of tumour proteins. After isolation from tumour tissue by extraction and precipitation these were subjected to short acid hydrolysis and the resultant amino-acids were separated by the accepted methods Precautions were taken against accidental racemisation of the amino-acids, and those amino-acids well known to undergo such changes (serine, proline, cystine and alanine) are excluded from the discussion The amino-acids from normal calf lung gave the rotational values for the *l*-series that are to be found in the literature, but those derived from the Brown-Pearce rabbit tumour and from the Stamm-Ehrlich mouse adenocarcinoma showed about 4 per cent of *d*-leucine and of *d*-lysine The former tumour also contained 44 5 per cent of *d*-glutamic acid, while a non-irradiated ovarian carcinoma from a human source contained 42 7 per cent. of *d*-glutamic acid The glutamic acid of the tumours is thus seen to be chiefly in the racemic form (89 per cent , or 44 5 per cent. *d*-form), and the investigators estimate that at least a tenth of the whole tumour protein is racemised Although little is known about the racemisation of glutamic acid in acid solution, a similar analysis of normal ovarian tissue showed the presence of the normal *l*-acid exclusively. Human ovarian tumour and mammary carcinoma, on the other hand, contained large amounts of the *d*-glutamic acid (15 6, 31·7, and 24 6 per cent respectively) The lower values in the material from human sources may be ascribed to contamination with non-tumour material and it is suggested that the degree of racemisation may possibly serve as an indication of the purity—or even of the degree of malignancy—of a tumour. Tissue from rabbit tumours and from normal organs of tumour-bearing or of normal rabbits gave confirmatory results. The glutamic acid in the tumour tissue contained 42·6 per cent of the *d*-form, but that in the normal organs was entirely in the *l*-form.

The distribution of the racemised proteins in the tissue is discussed as regards the arrangement of the abnormal amino-acids in the protein molecules, and Kögl and Erxleben argue that variations in the tissue proteins would be associated with changes in the proteolytic enzymes of the cells. This view is supported by the known resistance of peptides containing *d*-amino acids to the attack of the usual peptide-splitting enzymes. It is recognised that in the body the amino-acids can undergo an oxidative de-amination, and it has been found that kidney and liver slices can de-aminate amino-acids of the *d*-series in addition to those of the *l*-series [2] Furthermore, the *d*-enzyme is more resistant than the *l*-enzyme to mechanical or chemical attack The presence of enzyme systems capable of dealing with the *d*-series of amino-acids is linked up with the observation that members of the *d*-series can be converted in the body into those of the *l*-series [3] Glutamic acid has long been known to be especially reactive, and the oxidative de-aminating systems of the *l*-glutamic acid have similarly been found to be less active than those of the *d*-compound.[4] In contrast, the *apo*-dehydrase system present in liver interacts only with glutamic acid of the *l*-series [5]

The special function of glutamic acid is also exemplified by the part which it plays in the transamination discovered by Braunstein and Kritzmann in 1937 and recently discussed by them again [6,7] The responsible aminopherase systems reversibly transfer the amino-nitrogen of dicarboxylic acids to keto-acids ; thus glutamic aminopherase can transfer an amino group from glutamic acid or to ketoglutaric acid It is of especial interest that the enzyme system is optically selective, "only the natural *l*-forms of the amino acids act as NH_2-donators with aminopherase solutions" [6] Furthermore, the amino acids formed also belong to the *l*-series . the evidence for a slight transformation of the *d*-amino acids is inconclusive. Although the occurrence of transaminating systems in tumour tissue is still a matter of controversy, they appear, at any rate, to be less active than in muscle [5] It is therefore highly suggestive that tumour tissue is comparatively deficient in an enzyme system which is specific for the transformation of *l*-amino acids

In considering the result of carcinogenic stimuli, Kögl and Erxleben conclude that the essential change in the cell is to be sought in the enzymatic protein synthesis and they put forward the hypothesis that the cancer cell has lost the capability possessed by the normal cell of utilising only the normal *l* amino acids in building up its structure. Although it is not known which ferment system is primarily concerned, it seems significant that in the amino-acid oxydase system it is the *l*-system which is most easily destroyed, while the capacity for using the *d*-series of acids

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1. Kögl, F , and Erxleben, H , *Hoppe-Seyl Z* 1939, 258, 57.
2. Krebs, H A , *Ibid*, 1933, 217, 191, and 218, 157 . *Biochem J* 1935, 29, 1620, 1951
3. du Vignaud, V , and Irish, O J , *J biol Chem* 1935, 108, p. xciv · 1938, 122, 349
4. Weil-Malherbe, H , *Biochem J.* 1936, 30, 665
5. von Euler, H , Adler, E , Günther, G , and Das, N B , *Hoppe-Seyl Z* 1938, 254, 61.
6. Braunstein A E , *Nature, Lond* April 8, 1939, p 699
7. Kritzmann M G , *Ibid*, p 603

remains The latent period elapsing between the application of a carcinogenic stimulus and the inception of malignancy is uncertain, but the time taken by methyl cholanthrene, for example, to produce a tumour in the mouse is of the same order as that required for renewal of the tissue proteins, as estimated by nutrition experiments in feeding amino acids containing deuterium[8] In normal growth, it is assumed, the optical purity of the tissue proteins is maintained by a ferment system converting any acids of the "abnormal" *d* series into the corresponding *l* compounds When this regulating mechanism is upset, there may be a latent period before the abnormal constituents reach a critical concentration In the opinion of Kögl and Erxleben the great variation in the resistance of the organism to carcinogenic stimuli may well be referred to the great capacity for variation in the protein make up of the tissues The wide variation possible in the proteins also allows for differences in the resultant malignant manifestation, and tumours may be regarded as inferior imitations of normal patterns, further shown by the variation between the tumour cells themselves In autonomous growth, infiltration of the surrounding tissues takes place, since the normal cells do not possess the enzymes required to check the invasion of the tumour cells The varying degree of invasion that is found may be related to the wide limits between which the steric changes (racemisation) can occur As an example, the amino acids of a benign uterine myoma were found to be racemised, if at all, to a very much smaller degree than those derived from malignant growths Even in malignant tumours the racemisation can be but partial, otherwise any parasitism would be impossible

The Dutch investigators doubt whether the filtrable viruses are to be classed with the ferment systems responsible for the irregular protein production They emphasise that the *d* series of amino acids and their derivatives may not necessarily be always pathological, they may in fact possess other functions, as in the possible formation of antibodies[9] While admitting that the problem of malignant degeneration requires the consideration of many other factors, they claim that this in no way vitiates the significance of the present findings

CHEMOTHERAPY IN EXPERIMENTAL TUBERCULOSIS

By giving comparatively enormous multiple doses of M & B 693 to guineapigs W H Feldman and H. C Hinshaw (*Proc Mayo Clin* March 15, 1939, p 174) have apparently been able to retard and modify the course of subsequently inoculated tuberculosis Each of twenty guineapigs was given 250 mg of 2-sulphanilyl aminopyridine (M & B 693) by mouth twice daily for three days and was then inoculated subcutaneously over the sternum with 0 0001 mg of a strain of tubercle bacilli isolated three months earlier from a patient with pulmonary tuberculosis Similar doses of M & B 693 were then given for a further ten days and then halved, administration of the drug being continued until the death of the animal or the end of the experiment eight weeks after the inoculation A control group, comparable in age and size, was inoculated with the same strain of tubercle bacilli but received no drug When a guineapig in one group died and showed macroscopic tuberculous lesions (microscopic lesions are disregarded in the report under consideration) an animal in the other group was killed and examined for the purpose of comparison Such lesions were found in all the members of the control group, the spleen of each being strikingly tuberculous and the lungs of nearly all of those that came to necropsy five weeks or more after inoculation being slightly to moderately affected The lesions in the 693 treated group 28–56 days after inoculation are summarised thus definite lesions of liver, lungs, and spleen in 1 animal, pulmonary lesion with doubtful lesion in spleen in 4; doubtful lesion of spleen alone in 1; and no macroscopic lesion in liver, lungs, or spleen in 6 The experimenters suggest that, since M & B 693 is excreted very rapidly, the level of the drug in the blood was probably not maintained, and that smaller doses given every four hours might have been even more effective They, however, realise that, although saturation of the tissues with M & B 693 before inoculation of tuberculosis appears to modify and retard its course, their results do not imply that the drug would be of any value in the treatment of tuberculosis

FEMININE PHYSIOLOGY IN THE FAR EAST

COMPARATIVE data about the human menstrual cycle are scarce, and it is interesting to have a report from P Huard, A Bigot, and Do-Xuan-Hop on their investigations in Indo-China (*Rev méd franc extrême Orient*, 1938, 19, 751) The work is based on inquiries made among Annamite or Eurasian girl students and hospital patients in Hanoi and among some 1200 girls and women living in the town and its suburbs The authors were careful to limit their investigations to those whom they thought would give material for truly representative statistics

The recognised criteria of puberty are inapplicable to the Annamite girls, for they develop pubic hair comparatively late in life, if at all, and in the country districts they still wear the traditional garment restricting the breasts They usually experience their first period during the hottest months of the year, and the date is earlier among girls living in the towns There is some evidence, too, of a relation between the social class—i e, the degree of luxury enjoyed—and the onset of menstruation. Thus the age of the first menstruation is most frequently 13 years 6 months for Annamites of "bourgeois" class and 16 years 3 months for peasant women. The average age for these two Annamite groups was 14 years 10 months, while among the half-caste girls it was 13 years 8 months These figures the authors compare with those for other types as follows —

TYPE	FIRST MENSTRUATION
Annamites	14 years 10 months
Eskimos	15 ,,
Japanese	14 ,, 7 ,,
Koreans	15 ,,
Chinese	14 ,, 5 ,,

The comparison gives no support to the [illegible] that puberty is early in warm countries, for there is no great difference in the time of onset [illegible] types living under vastly different clim[illegible]

Reviewing the observations of [illegible], Huard and his collaborators refer to [illegible] belief that in the United States the [illegible] earlier in every generation, and he [illegible] that it is gradually approaching that of the [illegible] Indians who have been acclimatised for [illegible] L. Bolk, they say, reports a [illegible] advance in Holland and attributes [illegible] increased tempo of life It seems to be [illegible] that puberty comes later under conditions of [illegible] and poor hygiene and earlier in towns than [illegible], or when the girl is cut off from [illegible]

In Annamites the interval [illegible] to the next was found to be 28–31 [illegible] per cent. [illegible] cases; but it seems that [illegible] although periodic, is [illegible] In 81 per cent of cases [illegible] four, or five days, but [illegible] periods lasting six, seven, or eight days. Of 717 women questioned 31 had no periods, and of these 16 had nevertheless borne several children; this seems to happen quite often with the women of Annam. The menopause usually comes on between 43 and 50.

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[8] Ussing H H., *Ibid*, 1938, 142, 400
[9] Lettré, H , *Z angew Chem* 1937, 50 581

The usual age of first marriage is a little over eighteen years, and it seems that, as in China, modern education and customs in Indo-China have delayed the traditional marriage age by about two years. The mean age for the first pregnancy is 20 years 9 months—i.e., after less than two years of married life. There are 2 living children per family, the stated pregnancies amounting to 3·9 per woman (3 66 births and 0·24 abortions). The sex ratio of infants born is about 118 males to every 100 females. Infant mortality is high and nearly half the children die during their first fifteen years.

Huard and his co-workers conclude their report with an account of the traditional ceremonies and popular beliefs related to the menstrual period in Indo-China. Its advent is apparently unimportant in the life of an Annamite girl, but many superstitions have arisen from the belief that a menstruating woman is impure. In Cambodia and certain other districts elaborate public rites are associated with the appearance of the menstrual function.

PECTIN IN DIARRHŒA

IN the Ingleby lectures concluded in our present issue Dr. Smellie speaks pessimistically of the apple diet, saying that he has never seen even temporary improvement from its use in infantile diarrhœa. Meanwhile the remedy seems to find fresh converts on the Continent, and the alleged usefulness of apple pulp is now attributed by P. Corsonello not to the cellulose or tannic acid it contains but rather to the pectin, which he says acts by absorption of water, toxins, and bacteria, either in alkaline or in acid fæces (*Minerva med*, *Roma*, 1938, 29, 590). Pectin, *a methyl ester of pectic acid, was discovered in 1825* by Braconnot and for many years has been produced commercially, mainly from the white of the rinds of citrus fruits and from the pomace produced in the manufacture of cider and perry. It was thought for a long time that pectin, used for making a stiff gel in jams, could act only in an acid medium, and great trouble was taken by the manufacturers to obtain the correct degree of acidity; but G. Spencer in 1929 reported that gels could be equally well formed in an alkaline medium. Besides confirming Spencer's observation, Corsonello publishes ten cases of apparent cure with pectin in either putrefactive or infective diarrhœa.

OPIUM IN MANCHURIA

IN his account of opium administration in Manchukuo in *Contemporary Manchuria* (January, 1939, p. 18), T. Nagashima frankly admits that the opium policy which Manchukuo has adopted under Japanese supervision "is not altogether free from conflicting opinions when viewed from an impartial and fair standpoint." It appears that opium addicts abound throughout the country, the estimated number of smokers amounting to 900,000. A ten-year scheme of reform has been promulgated comprising the registration of addicts, prohibition to minors, and the setting up of a state monopoly for opium to control cultivation, sale, and importation of the drug. There are government infirmaries for the relief and cure of addicts but these seem to be merely accommodating quarters for smokers, and the number of "cured" addicts that have needed readmission is said to have increased by 70 per cent. A total of 200 infirmaries are to be built or enlarged within the next three years with a view to curing all of the existing 900,000 addicts within ten years. The average time required to cure an addict is said to be 50 days, but it is assumed that 50,000 will either rid themselves of their habit or die before the ten years is up. Contrary to the view officially maintained in India it is asserted that, providing that good-grade opium is used, there is little harm in smoking compared with eating opium.

Allusion is made to the importation into China of Bengal opium, which in 1830 had reached such an excess as to lead to the burning of 20,000 boxes of the drug by the Chinese, and the famous yet infamous opium war. The efforts of the Shanghai commission of 1909 are regarded as nugatory and little or no significance is attached to the international opium conventions of 1912, 1925, and 1931. The article sets out the elaborate provisions of the new law of 1933, and gives details of the profits derived from the state monopoly of opium and the purposes to which they are to be applied.

This rather roseate review hardly harmonises with the reports made to the League of Nations. Last year the assembly was informed that the areas of China under Japanese control so far from showing any improvement had become worse. Allusion was made to some 3840 licensed opium saloons in 181 cities in Manchuria and Jehol, and it was affirmed that the Japanese had taken advantage of their incursion into Chinese territory to spread drug addiction among the Chinese population. Increased imports by Manchuria of Iranian opium were reported, as well as the manufacture there of narcotic drugs for illicit purposes.

DERMATOLOGY AND FOLK-LORE

ADDRESSING the St. John's Hospital Dermatological Society on April 26, with Dr. R. T. Brain, the president, in the chair, Dr J. D. Rolleston said that no skin disease, nor indeed disease of any kind, had received so much attention in folk medicine as warts, the literature on the subject even exceeding that on whooping-cough or "ague." Next in importance in popular estimation came herpes zoster and then alopecia, boils, burns, cosmetic defects, congenital abnormalities, ringworm, urticaria, cancer of the skin and chilblains in the order named. As in his previous paper on "Folk-Lore and Medicine" (see *Lancet*, Jan. 21, 1939, p 160) Dr. Rolleston discussed the various preventive and therapeutic measures used in folk-lore under the following headings: (1) transfer of the disease to other persons, animals or inanimate objects; (2) animal and plant remedies; (3) religious influences, including invocations to patron saints, (4) the healing power of water in the form of wells, springs, fountains and streams; (5) the mystical power of odd numbers; (6) repellent and disgusting remedies for the object of driving out the evil spirit supposed to be the cause of the disease; and (7) miscellaneous cures, such as the doctrine of signatures, the influence of the moon and fasting saliva.

IMPRISONMENT FOR SEX OFFENCES

Mr. Pollens describes American experience and takes the view that for the dangerous sex criminal imprisonment is not a cure.[1] The offender, even if incurable, can be permanently secluded only if he is insane, though a term of imprisonment is no safeguard against further offences The situation is the same here and parallel case-histories are to be found in this country. The author hopes for reform by improvement of emotional education and encouragement of normal sex development, placing the blame for many sex perversions upon ignorance and taboo—a view for which there is much to be said, although more deep-seated influences are probably at work. The book is written in everyday language and, while it adds little to expert knowledge of the subject, it may be recommended to anyone who feels the need for information about a type of disorder which is more easily condemned than understood.

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[1] The Sex Criminal By Bertram Pollens London: P 1939 Pp 211. 7s 6d

ADDRESSES AND ORIGINAL ARTICLES

CLINICAL SENSE AND CLINICAL SCIENCE *

BY JOHN A RYLE, M D Lond , F R C P

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THE inter relationships between science, teaching and practice, must have a perennial interest for us all How better to equip our sons and our students for their callings, whether professional or academic, than we ourselves were equipped must always be a matter for deep concern Seeking to condense within a few words what is most desirable in the mental equipment of the doctor it occurred to me that "clinical sense" was sufficiently descriptive of what we most covet in ourselves and have most admired in our teachers or colleagues Let us pause, however, to consider just what we mean by "clinical sense"

MEANING OF CLINICAL SENSE

Among my files of medical miscellanies I came recently upon a letter which I sent to *The Lancet* in 1934 It was prompted by some remarks of a fellow Guy's man, my friend and revered senior at Cambridge—Sir Frederick Gowland Hopkins —who, when discussing endowments for medical research during a presidential address to the Royal Society in that year, had occasion (without, perhaps, fully endorsing it) to quote the following sentence from an article in the *Times* —

"The older physicians, with minds undisturbed by a crowd of scientific facts, developed a clinical sense—*sui generis*—as subtle as the sense of taste or the sense of smell, and it was on this sense that the great school of English medicine was founded"

While accepting the existence of such a sense, my comment here was to the effect that I could not regard it as a separate faculty, or flair, or intuition vouchsafed to medical men We could scarcely pretend that such a faculty existed over and above or independently of the primary senses which physicians, physiologists, psychologists, and the ordinary man have recognised and studied in themselves and others, and beyond which no additional sense has been described Nor could it be agreed that the great school of English medicine was founded on anything so elusive and immeasurable While readily admitting that the minds of the older physicians were less disturbed "by a crowd of scientific facts" than the minds of the younger physicians of today, I deemed it furthermore an injustice to the training and the intellect of the clinician to suppose that he relied much or often on intuitive judgments

Several colleagues disputed with me in a friendly way, putting in a plea for the separate existence of a clinical sense Pondering their arguments, I concluded that we had never been at pains to discover what we meant by this familiar term We have all, indeed, admired in our own friends or our chiefs the ability to arrive without betraying the whole process, at wise and accurate decisions, but this ability is surely shared by all of us in some degree—or else we are no physicians Swift and wise decisions have a clear relationship to experience, especially to length of experience Their frequency and accuracy may proclaim degrees and standards of mental efficiency and types of personal endowment, but we cannot surely deny the contribution of clinical discipline

The term clinical sense has not, however, attracted laudatory comment alone To the pure scientist and to the hypercritical it has sometimes appeared as no better than a kind of guess work combined perhaps, with that necessary touch of sympathetic understanding which characterises the doctor and distinguishes him in some measure from men in other walks of life Surely we should not be content to applaud or belittle a faculty whose existence we do not deny Our very training should make us wish to analyse it

Those who have observed the manifestations of clinical sense in others or have been at pains to review their own achievements and judgments due to its possession in however humble a degree will, I believe, agree that the attribute is not something innate or intuitive but a complex faculty built upon prolonged training and exercise of the known special senses together with a sound knowledge of pathological possibilities Observational ability, the observational habit, observational accuracy, and a retentive memory for observed phenomena, together with an aptitude for the sifting and correlation of experience, are the main ingredients of clinical sense Perspicacity and sympathy in psychological observation are the counterparts of the visual, tactile, and auditory faculties in physical observation but depend primarily on the same special senses

The fact that observational ability of this kind and the wit to interpret phenomena may, on occasion, lead to surprisingly prompt and exact judgments is alone responsible for the view that these judgments are an expression of some separate and peculiar insight A good visual memory and brisk association tracts may be a rare combination, but they do not entail new method

Let us freely admit that some physicians with a high endowment of clinical sense are not wholly aware of the stages or processes of their judgments, or that they have lacked the time or desire to investigate them. The fact remains that these judgments are the result of sensory habit and discipline The Oxford English Dictionary gives "the faculty of perception" as one of its first definitions of "sense." Is not the degree in which he possesses "the faculty of perception" just what determines the special ability of the doctor ?

BASIS OF CLINICAL SENSE

As I have often maintained, the good physician requires the same qualities as the good naturalist. Take a walk abroad in the spring with a keen ornithologist, and, if uninitiated, you will be amazed at the swiftness and confidence of his judgments When you see with difficulty only a small brown bird, indistinguishable even with the aid of your book and binoculars from many another, he will acclaim this warbler or that and seldom err You may suppose that it is his trained eye alone that achieves where you fail, but analysis would probably show that his diagnoses were based on a composite knowledge of previously proved or likely habitat, of time of arrival in the spring migration, of movements and mode of flight, on a recognition of a tiny stave of song and on many recollections or visual images of other springs The size and shape and colour of the bird have clearly influenced him, but possibly less than and only in concert with these other observations

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* The annual oration delivered to the Medical Society of London on May 8, 1939

Do we say of our friend "What a wonderful ornithological sense he has"? No, we merely call him a good naturalist. And so with the clinician and the puzzling case; it is not the single physical sign so much as the circumstances of the illness, the age and habitus and environmental conditions of the patient, the syndrome echoing syndromes encountered before, or even a single peculiar symptom or sign recalling the features of a single other case These and an estimate of "the whole patient" and of his reactions to his illness may tell more in diagnosis and contribute more to prognosis and treatment than the most careful routine examination, more sometimes, let us remember, than all the details of a modern "complete investigation" with its attendant expense and inconvenience to the patient Such judgments cannot be called guess-work or attributed to a subtle insight, *sui generis*. They are the result of a discipline of the special senses, of an observational science differing only from the discipline and science of the laboratory worker in that the observations have not been set down in orderly protocols but lodged and stored in a busy mind, not tested and improved by measurement and staged experiment but at least amplified and assisted by experience. For the biologist's records and method the physician, however full his notebooks, must constantly, through pressure of circumstance, substitute his powers of memory and association.

It would not be difficult for any one of us to extract from student or consultative reminiscences notable examples of judgments attributable to a fine clinical sense or the faculty of perceiving. There are some particularly good stories of Sir William Gull's consultative triumphs, in which clinical sense and common sense prevailed where the wit or industry of others had been found wanting. One of the Guy's surgeons had a case of ununited fracture which was giving him concern and decided one day with his house-surgeon to waylay Gull and ask his advice on the case, scarcely expecting that he would have any useful contribution to make to so surgical a problem. Gull took a look at the man and said "Feed him on tomatoes"—nothing more The instruction was obeyed and the fracture united When asked later by the surgeon his reasons for this advice, he replied that the surgeon and his house-surgeon might know all about fractures but had failed to observe that the man had signs of scurvy.

Some years ago I was much worried by the case of a man home from the east with a history of amœbic dysentery. He had a large and tender liver, with upward elevation of its dullness, a continuous fever with sweats but no chills, and pain in the cæcal region. Emetine was quite ineffective. I asked Lord Horder to see him. He advised quinine, and all the symptoms and signs rapidly departed. The man, I knew, had also had malaria, but I had been unable to draw another inference and to dissociate the present clinical picture from his dysenteric past.

Clinical sense may manifest itself in diagnosis, prognosis, treatment, and often too in the withholding of treatment. In the matter of diagnosis the judgment is frequently, as we well know, referable to recollections of a kindred case, to a fresh association of ideas, or to some small but carefully elicited historical point rather than to the discovery of new objective signs.

In the matter of prognosis how frequently we must all of us have said or heard said, "I believe this fellow is going to do" or "I don't like the look of this man," with full justification later for what seemed at the time a vague opinion. Are we not too content with the fact of such achievements and too little anxious to discover their manner? How often do we pause to analyse opinions and so make judgments of them? If we did so systematically, we should discover that general demeanour, pulse quality or some change in it, a seemingly trivial alteration in colour or muscular tone, the state of the skin or the lustre of eye or hair, the odour of the bedside, or an improved knowledge of prognosis in the particular disease born of accumulating experience, were severally or collectively the basis of the favourable or unfavourable opinion—not intuition, not guess-work, but once more the faculty of perceiving and of correlating past with present knowledge.

In the field of treatment and in the task of prognosis, with which sound treatment is so intimately related, good clinical sense seems to me more rare today than is the case with diagnosis The prevailing urge to action; the phase of over-reliance on surgery (whose triumphs in acute disease made us at first too impatient in the development of its wider potentialities); the vaccine craze; the proprietary endocrine allurements; the other blandishments of the advertising chemists—all of these have helped to lead us astray. I have on occasion been disappointed by the relatively poor therapeutic sense of colleagues whose ability I have otherwise held in the highest regard We must all feel ashamed at times of the ready susceptibility of our profession to fads and crazes in treatment. Drugs doubtful and drugs inert, drugs unorthodox, and even drugs dangerous are prescribed in vast quantities and often to the neglect of sensible management and regimen or a simple psychiatry

In therapeutics there are three chief dangers: (1) that of becoming stereotyped, (2) that of becoming timid or disillusioned, and (3) that of becoming crudely and inconsistently experimental. The man with a good therapeutic sense avoids these pitfalls and constantly adapts his physiotherapeutic and psychotherapeutic measures to the individual case, orders an iced melon or a shave or a change of room at the appropriate moment in a case of long illness; knows when to give morphine and when to withhold it; when to transfuse or not transfuse; when to tease, to be jocular or sympathetic, when to exhort or scold. At the same time he keeps warily abreast of new advances. I hold it no injustice to say that good therapeutic sense is rarer today that good diagnostic sense The oncoming generations are obsessed with treatments rather than trained and versed in Treatment.

And this brings me to the more critical part of my address, for I must here confess—even though you mock a middle-aged wistfulness for the things that appeared better when we were young—that I am also disturbed by a sensible falling off in the quality and quantity, or at least in the diffusion of sound clinical sense, in the wider usage of the term, among those just referred to as "the oncoming generations." But the fault, let me hasten to add, is ours not theirs. We allow them to be embarrassed by "a crowd of scientific facts" and methods instead of teaching them their proper place and use. Our hospital discipline has changed inevitably with the growth of knowledge for the better in many respects but for the worse in some

Picture for a moment two consultations on cases of abdominal pain. The first is presented in a few terse sentences by an overworked country doctor in the middle fifties. He tells you of the good lady's mode of life and temperament, of her worries and her exacting husband; describes her obstetric past and somewhat "allergic" ancestry; and concludes with a humble expression of his own belief that she has "a nervous tummy" and wants reassuring.

You soon confirm his view—even if you call it a "spastic colon", between you you dispel the cancer phobia and discourage the abuse of purgatives, and the patient goes home happy and with an improved prospect of health The second is presented by a successful suburban colleague in the middle thirties He starts the interview by saying "Mrs X has a troublesome pain in her right iliac fossa, here are her X rays, would you like to look at them?" Then, as you wave them aside, he proceeds to describe how he took her to a surgical colleague last year, who agreed that it would be wiser to remove the appendix, and how wonderfully improved she was for the first few weeks, since when the pain had returned and become the bane of his and her existence You sigh inwardly and start to unravel the whole mental and physical story yourself and then attempt the task of helping the patient and her doctor to the best of your ability without betraying your opinion that the operation was unwise and unnecessary and in its failure almost as potent a cause of persisting symptoms as your colleague's failure to know his patient

TRAINING OF CLINICAL SENSE

What is wrong with medical education that it should, while multiplying diagnostic aids and instilling far more basic science than our fathers had, be failing in its cultivation of judgment and the faculty of perception from which judgment derives?

I suggest that we need not go far for our answer, and that the overcrowding of the curriculum and the multiplication of accessory diagnostic methods are not alone to blame Children are often astute observers until they go to school The natural method of acquiring information is then steadily replaced by the didactic method Only a small proportion of boys and girls have the "natural history" bent so well established that it resists the confusion and interruption of a standard education The remainder cease very largely to look about them and become content with book and black board information With the school certificate disposed of one would think that the first M B might invite a revival of the inquisitive observing attitude of mind, but here again the syllabus is too fixed and lessons are too often staged and set, the student looks in the frog or worm for what he has been told to see, his microscopic section has been illustrated by picture or diagram before he inspects it or is accompanied by a class description In the remaining pre clinical years it is not vastly different He sees what he is told to see or expects to see and finds small encouragement to ponder common biological phenomena or to attempt a simple discovery on his own Classes, lectures, tutorials, supervisions, and examinations leave small time or room for individual thought or action, discussion or experiment

And then he arrives in the wards and has to acquire an entirely new orientation At last he must begin to look and see for himself Here eventually the better men are born again, but why should they have had to wait so long for their education in perceiving? For those of duller endowment it is sometimes too late or the acquisition of the observant faculty is at the best a slow and painful process,

Could we not from the beginning give our student a better chance and stimulus by prompting his interest in living animals and their movements and behaviour, by dissections without the book, by encouraging him to study human movements expression emotions, and all the daily events of human physiology on *his own and* with a proper infusion of intelligent assistance? Could we not, in anatomy and physiology, combine with more mammalian experiment a better use of the living healthy man and of those many functions of health which can be studied both by record and observation and *in the laboratory? Clinical study is largely* morbid physiology Every symptom has a biological significance and a physiological interpretation, but what proportion of students can give a reasoned physiological interpretation of such symptoms as fainting, nausea, flatulence, anorexia, the varieties of dyspnœa, and many forms of visceral or corporeal pain? To what extent are clinical teachers applying physiological principles in bedside instruction? I know that clinical demonstrations in the earlier years are given sporadically in some schools, but could we not whet the clinical appetite and proclaim the continuity between physiology and pathology in all the schools by at least one carefully prepared clinical illustration of a problem in one or both of these *subjects during each week of the pre clinical period?* I cannot see that in so doing we should be making the teaching of the basic sciences less scientific or less of a discipline I am certain that we should enhance the interest of the preliminary years and bring livelier minds to the problems of the ward At present a man may obtain first class honours in the natural sciences and yet be a poor observer and interpreter at the bedside

Let me give you an example of observational or inferential incapacity recently related to me by a friend He was proceeding from one ward to another with his firm, when they were met by a ward sister running upstairs with an amused look and a blood stained handkerchief pressed to her face He stopped and asked the firm "Was that an epistaxis or a hæmoptysis?" Several clerks plumped for hæmoptysis I am not sure, however, that that judgment in a beginner was much inferior to the judgment which daily and in all civilised countries prescribes removal of the appendix for chronic abdominal pains due to every conceivable cause other than appendicitis In most of such cases the fear of overlooking appendicitis, the lazy and bad philosophy that "it is better out, and operation can do no harm," an overweening belief in surgical infallibility, and the neglect of follow up inquiry have between them eliminated clinical sense The analysis of history and symptoms has been superficial and uncritical Alas, too, these defects have trained the public to believe in and expect appendicectomy

The inevitable subdivision of medicine into specialisms has broken the continuity of teaching The value of the "general approach" to any and every case, whether to a tonsillar infection or a patch of eczema, an enlarged prostate, or an anxiety state, is in process of being forgotten Investigation is tending to supersede and exclude instead of to supplement clinical appraisement In his first three years the student observes and investigates too little in his last three years, while learning to observe and investigate, he forgets his physiology and thinks too little

If we could set ourselves seriously to the task, each in his own sphere, of restoring clinical discipline to its proper place, we should go far to counteract wrong tendencies and to assist our at present quite inadequate revisions of the medical curriculum

MEANING AND USES OF CLINICAL SCIENCE

Let us now pass from the discussion of "clinical sense" to a consideration of 'clinical science' another and a newer objective for the student mind

Here again we would do well to start with definitions and with as clear an understanding as possible of what we mean by the term We should not understand by clinical science the simple application to clinical practice of more scientific methods than have been employed in the past The applications of physiology, pathology, immunology, chemistry, endoscopic technique, and radiology in medicine have conferred inestimable benefits, but we know too that they have added embarrassments and have tended to inhibit observational precision and to distract men's minds from the older disciplines. They have hampered, with the rapid spread of their influence, the orderly evolution of clinical sense where they might have enhanced it. They have made doctors more scientific in their methods and less so in their judgments Concurrently, however, with these disturbing evolutionary changes, and in part answer to my criticisms, we welcome today the advent of a new and organised branch of biological inquiry, employing new and old methods and the capabilities of men trained in various ways and purposefully detached from practice and the economic need for practice for the sole purpose of a more searching study of disease processes in living man This is the branch of inquiry which may appropriately be called clinical science and which, apart from its primary achievements, may come in time to influence our teaching methods Of clinical science in this sense and in this country Sir Thomas Lewis has been the leading advocate, and I cannot do better than quote a part of his definition

> "This science," he says, "seeks by observation and otherwise, to define diseases as they occur in man; it attempts to understand these diseases and their many manifestations, and here especially makes use of the experimental method. It makes definite experiments upon disease and watches the effects of experiment conducted by injuries however they arise; it culls, or actually creates and uses physiological and pathological knowledge immediately related and applicable to the diseases studied "[1]

TRAINING FOR CLINICAL SCIENCE

Where and how can clinical science be best fostered, and how are its early steps being guided? How far can it divorce itself from the practical medicine of the teaching schools? How far can it develop in its disciples faculties and methods of inquiry different from those employed by physicians hitherto? In the process of development can it safely dispense with that discipline on which we rely for our instruction in clinical sense? How may it render assistance to teaching and practical medicine, for that is a function which might be lost sight of in the natural eagerness for abstract knowledge? These are questions we should surely attempt to answer

Clinical science can be advanced anywhere where men of appropriate foresight and training have the time, the opportunity, and the material within their reach Sir James Mackenzie advanced clinical science in the course of a busy general practice Men primarily engaged in practice or teaching will, like the field naturalist, still make their contributions from time to time, sometimes in larger but usually in humbler ways The teaching hospitals and the professorial units will make their contributions and play a useful part as training grounds for new recruits to the whole-time service of academic medicine, of necessity, however, they combine much undergraduate teaching and hospital routine with their research activities, and so their present atmosphere is not wholly favourable to scientific advancement

There remain, thanks to the Medical Research Council and some large benefactions, certain organisations pledged primarily to the service of clinical science in this country. These include the medical research units at University College Hospital, at Guy's Hospital, and at the National Hospital, Queen Square; the surgical unit at Edinburgh; the new department of medicine at Cambridge, and the medical, surgical, and obstetrical departments now coming into being under the Nuffield scheme at Oxford.

These departments of clinical science will make their contributions in due course partly through new methods and discovery, partly through their demonstration of what scientific medicine (employing the methods of physiology and chemistry and the extension of safe experiment to man) can do in the clinical field over and above the achievements of routine observational methods; but largely too, in my belief, by working in close geographical proximity with those who research in and teach the preclinical sciences and with those who practise institutional medicine. In my view it would be a grave mistake for the disciples of clinical science either to withdraw themselves too much into their own laboratories or to establish research institutions which would work independently of existing hospitals and university departments

The frequent interchange of thought and discussion of problems as between the clinical scientist and the practising physician and his assistants and house-men is one of the most hopeful developments of these recent innovations. The interchange of thought and partition of problems with other biological scientists is surely as important The clinical scientist must have beds of his own, preferably not a large number, but he should be very willing too to confer on cases with his colleagues of the honorary staff, to stimulate their subordinates by his ideas and activities, and, while nursing his own interest, to become an active member of the larger hospital family.

He may have to accept that his scientific preoccupation with his problems entails a limitation of his clinical sense Clinical sense is born partly of long and varied and comprehensive association with sick men, women, and children, and partly of the very nature of that relationship I am not here hinting at the likelihood of his failing in sympathy with his patients, but rather at the inevitable absorption of interest by a finite problem to the exclusion of a full appreciation of the numerous other factors at work behind the whole and complex human problem. However defined or separate a disease-process may be, it tends to present in different ways and to have different effects in individuals Hospital patients, from environmental circumstance, are less easy to "know" than private patients The physician learns more clinical sense, as a rule, from his private patients than from his hospital cases He also acquires methods of approach and management which are sometimes of particular value in clinical assessments and are, on the whole, less easily acquired by the institutional research worker. Let us accept, however, that the clinical scientist is concerned rather with processes than with persons, and that his study of processes is not necessarily hampered, as the task of the physician would be, by limiting his view

In the matter of the education and selection of research personnel it has really come to this: can we ask our promising younger men to afford the time necessary for both disciplines, that which trains for clinical sense and that which trains for clinical science? Or, given a close association with other clinical workers, should we accept as suitable for clinical research men whose preliminary training has been predominantly pathological, physiological, or biochemical ? At what stage, too, are they to be selected ? And what are their later prospects ?

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[1] *Brit med J.* 1930, 1, 479

On all these matters I speak with interest and feeling and would seek advice because I am experimenting myself at the moment in the provision, simultaneously, of a clinical and scientific discipline for my research workers at Cambridge At present, most of the appointments are necessarily made from candidates whose training has been mainly clinical Their physiological or biochemical methods have thus to be acquired or reacquired This takes time, and aptitude may not always be forthcoming And yet, much as I should welcome recruits from other departments, I should not view with confidence the appointment of laboratory trained men lacking at least a year or two of stern clinical discipline after qualification, a discipline without which the nature of the problems to be explored can never be fully apprehended

For our purpose, at Cambridge, we have, on the *one hand, the facilities afforded by the generous* cooperation of my colleagues at Addenbrooke s Hospital and our association with them in their routine work, and, on the other, those deriving from the example and method and direct influence of senior workers in our own and the other university science laboratories

At University College Hospital, Lewis and his co workers have chiefly carried physiological method into the clinical field At Cambridge it is more likely that biochemistry will implement and direct our studies in the near future But in neither place is it likely that one science alone will be called to the aid of the research physician In neither place will other biological methods remove the necessity for close observational method and training Field work, follow up inquiry, metabolic balance experiment, transfer of a clinical problem to the experimental field, employing animals or healthy men—each and all will be invoked as occasion requires

As to the future of our younger clinical scientists a small proportion only will remain in academic medicine, but the others will return to teaching and practice bearing a new torch kindled by new training *and criticism*

Now the new centres of activity will look for their recruits not only to the university departments but also to the great teaching hospitals in London And so I would once more beg of my friends in the metropolitan schools and elsewhere to search their hearts in the matter of medical education, both clinical and pre clinical, and to aim at so training *their students that the coming generations of doctors* may develop a clinical sense that is more highly developed, more scientific and critical, and that the coming generations of clinical scientists may *still* retain that "faculty of perception" which has been the hall mark of English medicine from the time of Sydenham

The biological scientists have sometimes tended to look askance at the work of the clinician because his methods are crude and his standards of inquiry and criticism too low They have had no opportunity, not having experienced them, of appreciating the countless difficulties and interruptions to consecutive thought which the life of practice or practice combined with teaching compels The clinician, on the other hand, has tended sometimes to belittle the work of the laboratory man who would advise or assist him, knowing his lack of intimacy with the problems of personality, with the variability *of* diseases and symptoms, and with the severe limitations set by chance, by the shortage of beds, and by the tide of individual human affairs to experiment and consecutive observation in the hospital ward Mistrust of this kind is unnecessary and foolish, and all occasion for it departs when there is close and friendly association between the *practising* physician and the investigator within the same building If the first and constant duty of the physician is to improve his clinical sense, his second is to preserve the closest possible contacts with all the related biological sciences These sciences in return can derive undoubted inspiration *from the* daily experience and difficulties of the ward

THE HOSPITAL AS A UNIVERSITY UNIT

Certain hospitals in the past, with no loss but rather with infinite gain to the patient and the community, have provided our schools of medicine, the *training centres for observational* and therapeutic study *Certain hospitals in the future,* while retaining *all their freedom for loyal* and humane service to the *community, will, I believe,* become integral units of *our university system* and, as centres for training in scientific medicine, will contribute to the advancement of learning in a manner and degree as yet scarcely contemplated When science and practice work at close quarters both must benefit, just as already teaching and practice win mutual gain from contiguity

On one thing I feel sure you will *agree that in spite of all our difficulties the modern evolution of medicine is intensely* interesting and full of promise I hope you will *also agree* that it is occasionally worth while *to take stock, as I have* tried to do this evening For my own part, I am less anxious about the *immediate future of clinical science than I* am *about the future of clinical teaching* To forget or *forego the discipline that assists the faculty of perception would be a calamity* for which no other discipline could wholly *compensate It should* not, *however, be beyond us to discover how* the training both of sense and science in a better manner than heretofore may become the prerogative of all our students

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" Eugenics is founded upon the doctrine of the natural inequality of man The extent to which men differ by nature is a question upon which people are inclined to have different opinions on the basis of their political or social philosophy Those of aristocratic leanings like to think that distinctions of rank and station go along with rather marked differences in hereditary endowment Champions of equal rights, those who do battle against the powers of vested privilege, take comfort in the thought that the native qualities of the privileged classes are no better than their own, if as good Much of the opposition to eugenics is primarily a sort of defense reaction arising out of a concern for ideas or sentiments to which eugenics is felt to be somehow antagonistic . . As eugenists, we are committed to no particular social, religious, political or economic creed, that we are no more concerned with the class war than the botanist or astronomer, that we are quite willing that Mary should marry Jack or any one else provided their progeny will *probably* not be imbeciles lunatics or otherwise a burden to society ; that we would like to have relatively more progeny from people with fine hereditary endowments, although we *do not have the remotest intention of recommending* any coercive measures for the attainment of this end ; that we look to education and the development of eugenic ideals as affording the basic conditions for any noteworthy eugenic improvement With these aims all intelligent and fair minded people, I think, can not fail *to be in accord* '—*Prof* S. J Holmes, *Science*, April 21, 1939, p 351

CONTROL OF *STAPHYLOCOCCUS AUREUS* IN AN OPERATING-THEATRE

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THE investigation described in this paper was prompted by the occurrence of suppuration in a large proportion of patients after "clean" operations by the surgical unit of University College Hospital. In most wounds the suppuration was obvious on the fourth to the fifth day after operation, though in some it appeared later It was relatively superficial in some—e g, in the rectus sheath in most of the laparotomies—though in one case staphylococcal peritonitis developed The infection was usually deep in suppurating thyroidectomy and thoracoplasty wounds With the exception of one *Streptococcus pyogenes* infection, suppuration was due to *Staphylococcus aureus* We have recorded the results of the investigation because our conclusions differ from those of recent American investigators who indict the air as the main source of staphylococcal infection in operation wounds.

Sources of *Staph. aureus*

The routine sterilisation of instruments, ligatures, lotions, dressings, gowns, masks, and gloves was reviewed and found satisfactory Broth cultures from ligatures, instruments, and instrument-rinsing saline were made at the end of a number of operations and found free of *aureus*. There remained for consideration the air of the theatre, the skin of the patient, and the skins and upper respiratory tracts of the theatre staff

Methods of sampling and identification of cultures —Direct plating on 5 per cent. horse-blood agar was employed whenever possible. Broth cultures were not more sensitive in revealing small numbers of organisms and gave no idea of the number of organisms originally present. The skin was sampled with a broth-moistened swab rubbed with a circular motion twenty times over an area 4 cm. in diameter. The swab was plated as soon as possible after taking. The nose was sampled with one swab through both nostrils.

All plates were incubated for a day at 37° C. and for two days at 18° C. in a north light to facilitate the production of pigment. All golden and white colonies consisting of typically arranged monomorphic cocci 1μ in diameter were tested in mannitol; and all strains that fermented mannitol within three days were tested for the production of coagulase

We have called *Staph aureus* only those organisms which produced coagulase. A few coagulase-positive white strains have been included in the *aureus* group. In effect, this is the practice of Cowan (1938a), who found that the correlation between the production of coagulase and that of hæmolysin was complete, and who grouped the hæmolysin-producing staphylococci, irrespective of the production of pigment, into one species, *Staph. pyogenes*. Since most of our coagulase-positive strains yielded golden colonies, we have for the present retained the more familiar label of *Staph. aureus*.

The production of coagulase is not a constant feature of those cocci that on all other counts should be classified as pathogenic *Staph. aureus*, but in most recent surveys of staphylococci (Cowan 1938a, Chapman et al. 1938) the proportion of coagulase-negative strains has been small. Moreover, since all those strains from the suppurating wounds that we tested were coagulase-positive, the disposition of coagulase-positive staphylococci in the operating-theatre seemed likely to reflect the disposition of all pathogenic *Staph. aureus* adequately enough for the solution of our problem.

AIR

Plates were exposed near the instrument table during operations; twenty-five for an hour, forty-nine for half an hour, and thirteen for 35–120 minutes Half-hour plates, being least crowded with colonies, are best for investigation. The plates were counted after incubation for a day at 37° C. and three days at 18° C.

A total of 4894 colonies, mostly of air saprophytes, grew on plates exposed for a total of 63 6 hours, an average of 77 per hour. Eleven plates showed *Staph. aureus:* 4 colonies twice, 2 colonies twice, and 1 colony seven times; a total of 19 in 63 6 hours, or 0 3 *aureus* colonies per hour on a plate 12 sq. in. in area.

This is the best available estimate of the continuous risk of infection by *aureus* from the air, though it must vary with the state and staff of the theatre. The area of an operation exposure is also usually about 12 sq. in. and the direct settlement on it of one *aureus*-bearing particle every three hours is not an obvious danger.

But air-borne *aureus* settling on instruments, on swabs, and on the gloves and sleeves of the surgeon may also be carried into the wound. Meleney (1935) assumed that patient, surgeon, assistants, tables, and instruments constituted the area at risk, which he estimated at 4000 sq. in.—i.e., 333 times the plate area. On this basis 0 3 × 333 = 100 *aureus* menaced the wound in an hour.

But in fact only a few of the objects in this area are introduced into the wound. It is unlikely that the total area of wound and objects introduced into it will be more than say, that of a 24 × 18 in instrument table—i e., 432 sq in, which is 36 times the plate area. On this basis 0 3 × 36 = 11 *aureus* menace the wound every hour.

PATIENT'S SKIN

Twenty-four to forty-eight hours before operation the skin was shaved, washed with ether soap and water, ether and alcohol, and finally a 1 in 1000 solution of flavine in spirit. The area was sterilised a second time with the flavine paint when the patient was on the table. Swabs were taken immediately before the second application of antiseptic, and *aureus* was found in 4 of 50 skin-plates (9, 2, 1, and 1 colony). Swabs taken after the second application were heavily charged with flavine and usually sterile *It may be assumed that the antiseptic preparation* is reasonably effective in killing *aureus* on the superficial layers of the skin.

Staph. aureus may survive in crypts of the skin, to be released during operation by sweating or by section of a crypt during incision. The low incidence of *aureus* in the partly sterilised skin does not account satisfactorily for a high incidence of *aureus* suppuration.

NOSE AND SKIN OF THEATRE STAFF

At the time of maximal incidence of sepsis skin samples from the back of the right wrists and nasal swabs were taken from forty persons, including senior operating staff, theatre and ward nurses, dressers and a few adult patients in the male ward. Eighteen of these were more or less pronounced nasal carriers, and two of these were skin-positive; one nose-negative person was skin-positive.

With these tests an estimate was made of the incidence of staphylococci infesting various situations. The infestation was high in the nasal cavities, and the carrier-rate agrees with that found in larger surveys of *aureus* carriers (see McFarlan 1938); it was low on the skins tested and in the air. It was impossible to discover whether the particles in the air giving rise to *aureus* colonies contained more than one coccus But the slow development of, and the uniform size attained by, the *aureus* colonies, compared with the growth rates of colonies from experimentally seeded single cocci, exclude the possibility that initially there were very large numbers of cocci in each colony producing particle We have already assumed that the *Staph aureus* air menace was, on the average, eleven particles an hour Even if each consisted of twenty cocci, they would be unlikely to settle in one part of the wound, and the odds against an inoculum of twenty cocci getting a foothold in relatively healthy tissue must be high The rarity with which very small doses of known pathogens can be made to infect susceptible animals, even after passage, makes it unlikely on a priori grounds that *aureus* infection would occur readily in such circumstances We have, however, no direct evidence on the point Aside from these speculations we have evidence that *the air was not responsible*, for, whereas its average *aureus* content remained constant, the suppuration disappeared, although no attempt was made to prevent the access of air bacteria to the operation wounds In any event the constancy of infection at the outset of this investigation suggested a source of *aureus* more constant than the air proved to be On the other hand, the danger from a pronounced nasal or skin carrier in the operating staff should be minimised by the use of masks, gloves, and gowns The implication of any one source, in the absence of more extensive data, would have been a matter of conjecture had not the incidence of infection proved to be closely associated with one surgeon Most of the operations were performed by surgeon A or surgeon B, and in table I the association of sepsis with A is clearly seen (see also fig 1A) Of 54 "clean" operations performed by A in a five months' period, 14 were infected by *Staph aureus*, and only 1 of 41 operations by B in the same period

Table V shows that, during the year under consideration, the operations performed by A and B were comparable, hence the suppuration in A's case was not due to a difference in the operative material of the two surgeons Both A and B used the same staff and theatre, and often both operated in the same session The infection apparently depended on the intimate contact of operator with patient, *for* at many of the operations B assisted A and A assisted B The difference in the incidence of infection in A's and B's cases is such that the odds against it arising by chance are over 200 to 1 The cause of the infection was therefore to

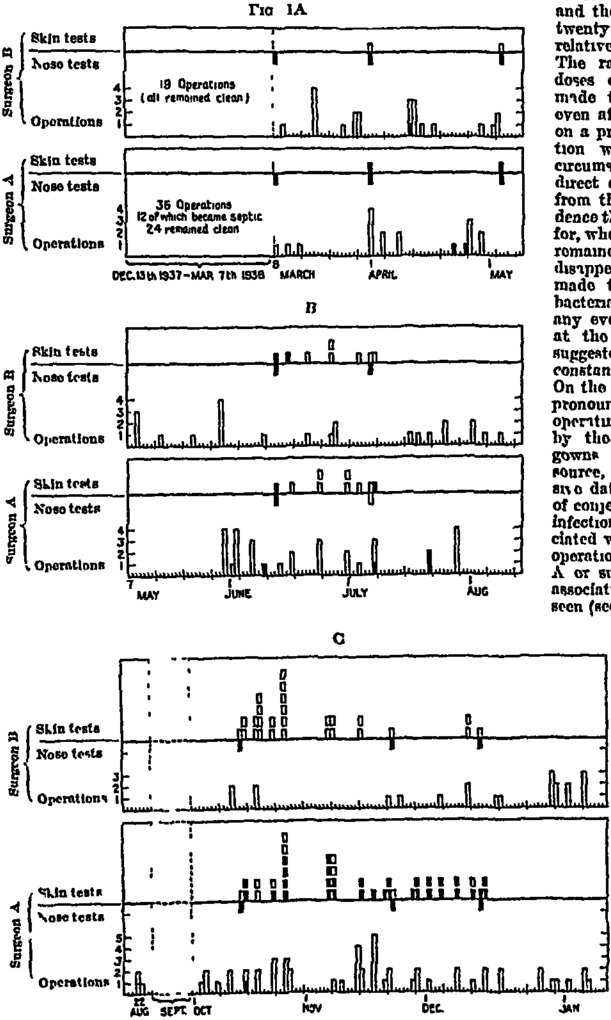

Fig 1—Chart of operations and nose and skin tests for the presence of *Staphylococcus aureus* White columns indicate (1) negative results of tests and (2) operations not followed by suppuration Black columns indicate (1) positive results of tests, and (2) operations followed by suppuration due to *Staph aureus* A Preliminary period under ordinary conditions, B period during which operators wore battiste oversleeves and cellophane in masks, C, period in which additional manipulative care was taken

be looked for in some essential difference between A and B; it was unlikely that *aureus* in the air, on instruments, or on the skin of the patient was responsible

Both A and B were persistent nasal carriers of *Staph. aureus*, and platings of their nasal swabs showed several hundred *aureus* colonies B's nose was the more infested of the two, the swabs often yielding an apparently pure culture The results of swabbing A and B and the incidence of *aureus* infections in their patients are shown in fig 1, which records the *aureus* history of the two surgeons from Dec 13, 1937, to Jan. 11, 1939, omitting the month of September, 1938

TABLE I—INCIDENCE OF *Staph aureus* SUPPURATION IN CLEAN CASES (DECEMBER, 1937, TO MAY, 1938)

Surgeon	*Aureus* cases	Non-infected cases	Totals	Sepsis (per cent)
A ..	14	40	54	25 9
B .	1	40	41	2 4
Totals .	15	80	95	15 3

$n = 1$, $\chi^{2} = 8\,00$, and $P = 0\,0047$ (see Hill 1937)

Staph. aureus might fall from the nose or mouth on to the wound in heavy droplets spat through the mask or pass from the skin through holes in rubber gloves or through the sleeves of an operating-gown. These possibilities were investigated as follows

Masks specially designed to prevent the discharge of infected droplets are usually tested by placing culture plates in the line of possible discharge and instructing the wearer to cough (for references to recent work on mask tests see Arnold 1938) We adopted a more stringent test of permeability. After use the mask was laid nasal side upwards over a blood-agar plate and its outer surface lightly and evenly pressed on to the agar by a sterile 3½ in. rubber bung. By this means all the *aureus* capable of being brushed off the outside of the mask were sampled, and any mask that was *aureus*-free on its outer surface after operation might be safely assumed to be impermeable to the coccus. Nineteen tests were made on 4 carriers wearing masks without efficient cellophane. On the average the masks were worn for 100 min. *Staph. aureus* was found on six occasions; the colonies totalled 126. Of sixteen tests on 2 carriers with efficient cellophane in the masks, fifteen were negative. The masks were worn for 110 min on the average, and in the single positive test only one *Staph aureus* colony was found.

The ordinary theatre masks, made of two layers of butter muslin, let *aureus* through. A loose sheet of cellophane introduced between the folds of the muslin just before operation was ineffective, for it crumpled and slipped during the operation, and the mask was still permeable to *aureus*. A 6½ by 8½ in. sheet of cellophane (No. 600 P.T. Messrs. Pakcel Ltd) was sewn into a 7 by 9 in. pocket made in the middle of the upper border of a mask of double-folded muslin, 36 by 15 in. and sterilised in situ. The resulting mask was impermeable to *aureus*.

In the sixteen tests of A and B in these masks only one *aureus* colony was found on the outside; other colonies consisted of typical air saprophytes. Press-plates of the inside of these masks showed nasal and mouth flora, with *aureus* present in all those tested that had been worn by carriers.

The air discharged laterally from the edges of the mask might carry very fine droplets containing *aureus* Blatt and Dale (1933) find this lateral discharge to be "practically sterile," but even if *aureus* escaped from the carriers in this way it would contribute [illegible] to the already determined air-infestation, for droplets small enough to be carried out on this lateral discharge would have insufficient weight to fall directly on to the wound.

In the small number of mask tests there was no obvious difference between A and B.

Gown sleeves.—The gowns were of coarse linen, 48 meshes to the inch. The irregularity of the threads and the large size of the holes in this cloth are illustrated in the photomicrograph (fig. 2)

Press-plates of the outside of gown sleeves alone and of stockinette oversleeves worn over gown sleeves showed *aureus* at the end of the operation, but the introduction of battiste (British Pharmaceutical Codex 1934, p. 1136) oversleeves to cover the gown sleeves reduced the incidence of *aureus* on press-plates to one colony in forty-one tests on A and B.

The difference between A and B (table II) is obvious There was a similar difference in the skin swabs of A and B, 6 of 8 skin swabs of A, but only 2 of 10 swabs of B, being positive in a period of seven months Moreover, on five occasions scalpel-scrapings of B's skin were *aureus*-free.

These results suggest that the relevant difference between A and B was that, though both were nasal carriers, the skin of A was the more constantly infested with *aureus*, and that *aureus* was sweated through the gown sleeve of A during operation. This belief was strengthened by the results of testing the hands of A and B.

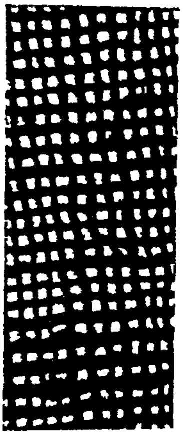

FIG 2—Photomicrograph of linen sleeve of operating-gown. (× 5)

Operating-gloves—*Staph. aureus* that survived scrubbing-up and disinfection of the surgeon's hands could get into a wound only through a puncture in the glove. Glove puncture is a relatively common accident. The leaks are more certainly discovered if an under-water test is made. In table III the puncture-rate in 6965 gloves is recorded.

The first series contains those worn in the main hospital theatres over a period of four months and includes both patched and unpatched gloves, 6585 in number; in these the incidence of puncture was 24 per cent. The second and third series compris tests on unpatched gloves worn by A and by B, chief assistants, and instrument nurse in sixty-nine operations; 14 5 per cent. were punctured In the last two series 48 of the 55 punctures were in the thumb, index, and middle fingers. 22 on the right hands, 26 on the left.

TABLE II—GROWTH ON PRESS-PLATES FROM THE OUTSIDE OF LINEN AND STOCKINETTE SLEEVES AND OF BATISTE ARMLETS

Surgeon	Sleeve material	Tests	Average time worn (min)	*Staph aureus*	
				Times found	Total colonies
B	Linen, &c Battiste	16 13	64 62	2 0	2 0
A	Linen, &c Battiste	31 28	71 60	8 1	50 1
5 others	—	11	45	0	0

There is thus the opportunity for the leakage *aureus* from the skin of the hand. It remains to be shown that (1) *aureus* was present on the hands of A but not of B, and (2) it could leak through punctures

(1) The infestation of sterilised hands by *Staph aureus* was tested by making 121 press plates of the inside of A's and B's gloves immediately they were peeled off at the end of an operation The number of colonies developing depended more on the amount of sweat in the glove than on the length of time the glove had been worn A glove that was dry after two hours' wear might yield 20 colonies, whereas a sweating glove worn for only 30 minutes might yield 500–1000 Moderately wet gloves often yielded colonies grouped in clusters, which were composed of only one or two types of colony Clustering appeared in 60 per cent of moderately crowded plates and gave the impression that each cluster had arisen from a circumscribed area on the skin, such as a pocket or crypt filled with one or two kinds of micro organisms Table IV records the tests on the right- and left hand gloves of A and B after operations lasting 20–180 minutes A's hands "excreted" *aureus* 30 times in 42 tests, the number of colonies varying from 5 to 5000 The total number of colonies was about 1 5 to 5 times the number of *aureus* colonies, the commonest non *aureus* organism being a non mannitol fermenting coagulase negative strain of *Staph albus* B excreted far fewer colonies, counts of more than 100 being rare, and *Staph aureus* was never found His common organisms were *Staph albus*, pleomorphic gram positive cocci, and diphtheroids, in that order of frequency As soon as the danger from A was realised, additional care was taken to avoid glove puncture during operation fingers were introduced into wounds as little as possible and instruments used for manipulation wherever possible (fig 1c) The capacity of *aureus* for leaking through holes in the gloves was estimated by experimental puncture

TABLE III—INCIDENCE OF PUNCTURES IN OPERATING GLOVES

Wearers	Gloves tested	Punctures and per cent	Consecutive operations
Hospital staff in main theatres	6585	1593 (24·2)	—
Surgeon A	81	11 (13 6)	42
Surgeon B chief assistants and instrument nurses	299	44 (14 7)	69

TABLE IV—GROWTH ON PRESS PLATES FROM THE INSIDE OF GLOVES AFTER OPERATION

Surgeon	Tests	Aver time worn (min)	Distribution of plates according to approximate number of colonies thereon						Times *Staph aureus* found
			Colonies	0	1–50	51–500	501–5000	5001 +	
A	42	80	*Aureus* cols	12	4	16	7	3	30
			All cols	1	7	15	16	3	—
B	29	77	*Aureus* cols	29	0	0	0	0	0
			All cols	4	20	5	0	0	—

(2) During a period when the infestation of A's hands by *Staph aureus* was pronounced experimental punctures were tested as follows At the finish of an operation the gloves were washed before removal, rinsed with alcohol, and dried on a sterile towel The finger tips and knuckles were lightly pressed on to a blood agar plate as a control culture and then punctured and pressed on to a second plate After puncture press plates were made of the inside of the glove, as described above Twelve tests were made Test 1 is illustrated in fig 3 Large holes were made by a needle, and several hundred *aureus* came through Smaller needle pricks were ineffective in two tests In surgical practice a very small hole might be temporarily enlarged when the rubber immediately surrounding it is stretched during operative manipulation Accordingly, in four tests a sterile 2 in glass disk was manipulated after the puncture in such a way as to stretch the rubber at the finger tips, and its surface was rubbed over blood agar, in two tests *aureus* leaked through In five further tests the puncture was made with a No 25 × 1 in hypodermic needle, and 0 2 c cm of sterile saline was introduced The fingers were lightly massaged together and then stroked on to a plate *Aureus* leaked through in all five tests In all, leakage occurred in eight of twelve tests

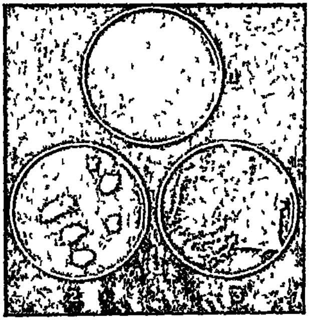

FIG 3—Photographs of press plates (1) Culture from outside of glove before pricking, (2) culture from outside of glove after pricking, (3) culture from inside of glove About half the colonies are of *Staph aureus*

The leakage of *aureus* apparently depends on a sufficiency of organisms and fluid—i.e, sweat in the natural condition—inside the glove and on the coincidence of the puncture with an *aureus* producing area of the hand With excessive sweating the *aureus* is disseminated throughout the space between rubber and skin and any prick may be the site of an *aureus* leak The average number of cocci escaping through leaks in A's gloves was very much greater than that likely to fall on to one spot in a wound from the air, or to be introduced on air infected instruments, or on sleeves through which *aureus* has been sweated Both the *aureus* infestation and the opportunity for implantation in the wound were greater in the hand than in all other sources tested In the light of the available evidence it is the *Staph aureus* on A's hands that must be considered to be the chief source of the suppuration

Effect of Precautionary Measures

Except emergency operations and those in which there was a possibility of wound infection from conditions found at operation, all "clean" operations performed by the staff of the surgical unit from Dec 13, 1937, to Jan 11, 1939 (September, 1938, excluded), have been watched, and the subsequent progress of the wound followed, by one observer Of 202 operations performed by four surgeons, 22 suppurated frankly and small pustules round the stitches developed in 7. Disregarding these 7 cases, since necrosis from excessive tension on the stitch probably contributed to the lesion, 8 4 per cent. of the cases suppurated. This figure is about the same as that reported by other observers for the general incidence of suppuration in clean operation wounds (Ives and Hirshfeld 1938, Meleney 1935) The record for each of the four surgeons is as follows :—

Surgeon A	..	Total	141	..	Suppurated	20
,, B	..	,,	84	..	,,	1
,, C	..	,,	22	..	,,	0
,, D	..	,,	14	..	,,	1

Fig 1 and table V record the operations of A and B. It will be noted that 4 wounds in A's series suppurated after the introduction of cellophane masks and batiste sleeves (fig 1B) and 1, a thyroidectomy wound made on Oct 14, 1938, after the modification of the operative technique (fig 1C) described in the text. After this operation the left index finger of the glove was found punctured, and a press-plate of the inside of the gloves yielded a heavy growth of *Staph aureus* Between Oct. 14, 1938, and Jan. 11, 1939, A performed 45* clean operations without suppuration, even though during this period *Staph aureus* was repeatedly grown from the inside of his gloves and his gloves were occasionally punctured. This observation confirms the conclusion reached by the tests—namely, that the leakage of an infective dose of cocci from a skin carrier is determined by more than mere puncture of the glove

Discussion

Staph aureus was found in various parts of the operating-theatre and its staff A precise definition of the infection risk from the different sources of *Staph aureus* is impossible, for the discovery of a likely source was necessarily followed by immediate attempts to stop it. Nevertheless, the staphylococcal history of surgeons A and B in the operating-theatre strongly suggests that the main danger lay in the *aureus* infestation of A's skin Wells and Wells (1936, 1938) have in the past few years emphasised the importance of the air as a vehicle of pathogenic bacteria, and Hart (1937) has advocated the sterilisation of the air in operating-theatres by ultraviolet light. Without minimising the importance of the Wells's observations or denying the efficacy of Hart's methods of sterilisation it is questionable whether postoperative *Staph. aureus* suppuration is necessarily due to air-borne cocci Our experience is limited to one surgical unit, but the striking decline of the sepsis-rate, in the face of a continued *aureus* menace in the theatre, suggests that in other cases the improvement due to a greater nicety of operative technique may have been wrongly attributed to the elimination of air-borne pathogens Indeed Hart, in his latest report (1938b), attributes his avoidance of sepsis to "meticulous operating room asepsis, development of a delicate atraumatic technique, and the use of the least irritating suture material" besides "the elimination of air-borne contamination" It is obvious that surveys of a number of operating units should be made (cf Hart 1938a) to decide on the incidence and importance of air-borne *aureus* For this purpose it is important to fix a standard method of measuring the number of air organisms present and criteria for the recognition of pathogenic strains. The air centrifuge of Wells and Wells is at present too expensive for general adoption as a means of sampling the air.

We suggest that the best readily available measure of the infestation-rate by *aureus* is the average number of colony-forming particles falling into a 4 in. petri dish per hour, calculated from colony counts of blood-agar plates exposed for 30 min each. A limited number of experiments we have made indicates that four such plates grouped round the patient, at operation-table level, provides a representative sample of the air organisms The proportion of plates contaminated with a given pathogen has been used as a measure of infestation of the air, but this figure gives a false impression of the risk. For example, from our data, 17 per cent. of 63 one-hour plates would have shown *Staph aureus* in the 63 hours tested, a misleadingly impressive figure compared with an average rate of 0 3 *aureus* per hour The definition of potentially pathogenic *Staph aureus* must, in the present state of classification of the staphylococci, be more or less arbitrary. A study of over 800 plates seeded with material from air, dust, skins, and nasal cavities has convinced us that neither *Staph aureus* nor *Staph. albus* can be safely identified by the appearance of the colony and the stained smear (criteria apparently adopted by many observers) The most useful single criterion is provided by the coagulase test This may be combined, if desired, with the test for production of α-hæmolysin (McFarlan 1938), and all golden, yellow-gold, and white colonies, made up of monomorphic cocci that ferment mannitol, should be so tested There is the same need for agreement about the criteria for recognising other air-borne pathogens It is obvious from recent work that hæmolytic streptococci cannot be regarded as potentially pathogenic unless they belong to the A, B, C, or G groups of Lancefield and Hare (Topley and Wilson 1936) If a relatively high degree of *aureus* infestation were demonstrated in the air of any theatre, a high risk of wound infection would not necessarily be implied A properly controlled test of the infectivity of small doses of *aureus* in human tissue is impossible We must rely on circumstantial evidence, and from the result of our own experience we suggest that, before the air is indicted as a source of danger, the sources we have demonstrated in our own theatre should be tested and stopped

The evidence pointing to the skin infestation of surgeon A, as the feature distinguishing him from the non-infective surgeon B, not only rules out air-borne cocci and those on the patient's skin but also those in the noses of both A and B as causes of the suppuration. But in other circumstances the patient's own cocci and the surgeon's nasal cocci might well be dangerous, though risk of direct infection from the nose can be removed by the use of an efficient mask The mask we devised is both efficient and comfortable The skin carrier presents a greater problem *Staph aureus* can be sweated through a gown sleeve, and the conditions inside a surgical rubber glove promote the "excretion" of *Staph. aureus* from a previously well sterilised skin

Apart from the solution of our immediate problem, the general applicability of our conclusions depends on the prevalence of *aureus* skin infestation among practitioners of surgery Surgeon A is not an isolated example of *aureus* skin infestation About the middle of 1938 surgeon D was nose- and skin-negative Shortly before an attack of *Staph aureus* boils he operated on one patient whose wound subsequently suppurated After the attack he was found to be a nasal carrier and subsequently sweated *Staph*

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* From Jan 11 to April 17, 1939, surgeon A performed 35 consecutive "clean" operations His skin was still infected with *Staph* [illegible], no suppuration developed in any of the wounds

aureus into his gloves at operation The discovery of surgeon A's nose and skin infestation followed an attack of boils some months previously It may be that heavy infestation of the skin is the result of recent manifest infection

A's nasal and skin strains behaved identically in all the tests applied They were coagulase positive, both produced α hæmolysin and leucocidin to the same high titre in parallel tests, and both were type IIIa by Cowan's (1939) slide agglutination test It is of interest that the nasal strains of A and D, who were skin carriers, produced high titre leucocidin of the Panton Valentine type B was a heavily infected nasal carrier He rarely had *aureus* on the skin, and his nasal strain was leucocidin-negative It is tempting to relate the dependence of skin infestation in nasal carriers to the pathogenicity of the nasal strain, as indicated by the production of leucocidin (Valentine 1936), but B's carrier state followed an acute staphylococcal sinusitis complicated by orbital cellulitis and osteomyelitis of the frontal bone, and, if the carrier strain is the same as the original infecting strain, its lack of leucocidin here at any rate does not indicate lack of pathogenicity The relationship between nasal and skin infestation, and between recent skin infection and the skin carrier state cannot be discussed profitably on such scanty data, these problems are being investigated The evidence so far obtained indicates that there is an appreciable skin carrier rate in the hospital community, though it does not approach the rate of 30–40 per cent found in the nasal cavities

TABLE V—CLASSIFIED OPERATIONS PERFORMED BY A AND B FROM DEC 13, 1937, TO JAN 11, 1939 (SEPTEMBER, 1938, EXCLUDED)

Type of operation	Surgeon A		Surgeon B	
	Healed	Suppurated	Healed	Suppurated
Herniotomy, inguinal and femoral	15	1	12	0
Herniotomy, scar	2	1	1	0
Excision of plantaris tendon	13	2	5	0
Partial thyroidectomy	9	4	6	1
Phrenic avulsion	2	0	3	0
Other operations on neck	1	3	4	0
Thoracoplasty	8	3	3	0
Extrapleural artificial pneumothorax	12	0	2	0
Other chest operations	5	0	0	0
Radical mastectomy	3	0	2	0
Other operations on breast	3	0	3	0
Laminectomy	4	0	0	0
"Cold" appendicectomy	3	0	3	0
Laparotomy and intra abdominal operations	15	6*	4	0
Operations on limbs and *limb joints*	20	0	27	0
Other operations	6	0	7	0
Totals	121	20	84	1

* In one case of these six the infection was due to *Strep pyogenes*; the remainder listed in the table were *Staph aureus* infections

Turning to the surgical aspect of the problem, it will be seen from table V that thyroidectomy, thoracoplasty, and laparotomy wounds suppurated most often It is perhaps significant that in these operations the amount of stitching necessary, and therefore the risk of glove puncture, is relatively great, though of course stitching is not the only procedure during which gloves may be damaged The possibility of infecting a wound by a leak of bacteria through a glove puncture has long been recognised When in 1893 Lane (1909) introduced his method of plating simple fractures he was well aware of this danger and in the description of his technique emphasised that the fingers should never be introduced into the wound and that "the instruments should be long in order to avoid any contact with the wound by the portion of the instrument grasped by the hand since the gloves are liable to be damaged" This accident is more frequent than is generally supposed, thus 24 per cent of the gloves used in the theatres of the main hospital were punctured. It may be objected that this figure includes gloves worn by students and nurses, and that the surgeon would be less likely to puncture his glove, yet of the surgeon's gloves alone 14 per cent were punctured at a time when special care was being taken to avoid damage In a few instances the puncture was discovered immediately it was made, but most of the holes were found on testing the gloves at the end of the operation, by which time there had been maximum opportunity for leakage Leakage is a danger only in skin carriers of pathogenic organisms like *aureus* Our results show that the carrier state may be more certainly demonstrated if press plate cultures of the inside of rubber gloves into which the subject has sweated are substituted for the usual procedure of skin swabbing

There remain for consideration a few other measures that have been advocated for the reduction of sepsis If the air can be shown to be the source of infection (Cowan 1938b) its sterilisation by such agents as ultra violet light (U V L) or aerosols (Pulvertaft et al 1939) is of obvious importance It is possible that the success of Hart's U V L is due less to air sterilisation than to the sterilisation of bacteria that have reached the wound from all sources, though the relatively poor penetrative powers of U V L make it unlikely that heavy inocula will be destroyed Hart (1938b) records that in one of the thoracoplasty wounds which suppurated badly in spite of U V L irradiation, it was known that the wound was contaminated with sweat escaping from a torn glove Meleney (1935) stated that the substitution of silk for catgut as ligature material reduced the incidence of wound infection We have no evidence that the ligature material has any influence on the incidence of wound infection, which depends on the introduction into the wound of an infective dose of bacteria In the light of our experience we would attribute the success of Meleney's technique to the greater nicety of operative procedure that he found necessary with silk. Hart (1938a) has suggested that so far as possible nasal carriers of *Staph aureus* should be excluded from the theatre The risk from this source is not necessarily great, and in view of the high *Staph aureus* carrier rates recorded in hospital communities such exclusion may be impracticable For example, in one week during the period recorded we should on this account have excluded the two senior surgeons one house surgeon one theatre sister, two nurses, and one dresser out of a staff of fourteen

The removal of *Staph aureus* from the skin of a carrier presents a problem yet to be solved A course of U V L had no effect on the cocal infestation of Surgeon A's skin There remains the possi of applying antiseptics, such as Dettol cream, to the hands before operation, as recommended by Colebrook and Maxted (1933); but in view of the marked infestation of A's hands with *Staph aureus* we were unwilling to risk any damage to the skin tissues that might have an infective sequel. The problem was less urgent than it might have been, for other prophylactic methods were completely successful However, so long as the skins of A and D remain infested, we cannot expect a continued freedom from wound suppuration. The problem of carrier cure is still under investigation.

Summary

(1) A high incidence of suppuration due to *Staph aureus* in "clean" operation wounds was found to be due to the leakage of *Staph. aureus* through glove punctures from the skin of one surgeon who proved to be a skin carrier

(2) The *Staph. aureus* present in the air of the theatre and on the skin of the patients operated upon apparently played no part in the incidence of suppuration

(3) Nasal carriers of *Staph aureus* among the theatre staff do not constitute a danger, provided that masks are made impermeable to direct droplet discharge from the nose and mouth.

(4) All the strains of *Staph aureus* recorded fermented mannitol and produced a coagulase for human plasma

(5) Skin carriers, negative by the ordinary swabbing tests, may sometimes be detected by cultivating the sweat from the inside of rubber gloves at the end of operation This method has the advantage of excluding positive results due to temporary superficial contamination of the skin

(6) The frequency of glove puncture during operation was found to be as high as 24 per cent.; this was reduced to 14 per cent. by precautions to avoid puncture

(7) The following measures were followed by disappearance of the sepsis: (*a*) the introduction of cellophane sheets into butter-muslin masks; (*b*) the wearing of batiste (B P.C) sleeves over linen gowns to prevent the escape of skin cocci in sweat; (*c*) the avoidance of glove puncture during operation by special attention to operative technique; and (*d*) the avoidance, so far as possible of direct handling of the tissues.

We are indebted to Dr. S. T. Cowan and Dr. F. C. O. Valentine for serological and leucocidin-production tests on some of our *aureus* strains; and to Dr O. Khairat for fig. 3

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ABDOMINAL RESECTION FOR RECTAL CANCER*

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The operation of abdominal resection for a high rectal growth has had more advocates on the Continent than in this country. Sometimes known as Hartmann's operation (Hartmann 1923), or anterior resection, it has been ignored by many of our text books, though descriptions of it have been given at various times by Rankin (1929), Gordon-Taylor (1929–30), and Gabriel (1937) This operation has certain advantages and my object is to suggest that it should be adopted more often in the treatment of rectal cancer.

It is common practice to speak of cancer of the terminal sigmoid as a pelvi-rectal growth, and it is not possible to make a sharp distinction between some high growths of the rectum and those of the terminal sigmoid In order to avoid confusion the term rectal cancer is used here to mean that the actual surface of the growth can be touched with the finger on rectal examination. I propose to limit my remarks to such cases, though it is obvious that a growth half an inch higher may require the same treatment

No operation for cancer can be regarded as efficient if it does not aim at removing not only the growth but also the potentially involved lymphatics and glands. Of late years increasing attention has been paid to the lymphatic drainage of the rectum and its involvement by growth. It will be germane to consider some of the findings

According to Miles the lymphatic drainage of the rectum takes place mainly in an upward direction along the superior hæmorrhoidal artery, but also laterally along the levatores ani muscles and downwards in the region of the ischio-rectal fossæ In 1925, as the result of injections of the rectal lymphatics, Villemin, Huard and Montagné suggested that the rectum should be regarded as two parts, each having a different lymphatic drainage The lower part, the ampullary portion and the ano rectal region, drains upwards but also laterally and downwards, while the upper, that part of the rectum above the lowest valve of Houston, drains only in an upward direction along the superior hæmorrhoidal artery. From the dissection of specimens removed by perineo-abdominal resection, Gabriel, Dukes and Bussey (1935) considered that the spread of rectal cancer took place first into the regional lymph nodes in the close vicinity of the growth and then in an upward direction along the superior hæmorrhoidal artery, lateral and downward spread only taking place when the lymphatics above were blocked by growth

Recently the same view has been taken by Gilchrist and David (1938). Out of 47 specimens removed by abdomino-perineal resection they found 2 in which as the result of metastases above the growth, a retrograde spread to lymphatic glands below the growth had occurred They found evidence, however, to suggest that a lateral spread in the region of the levator ani muscle was more frequent when the growth was at that level Present belief seems to be that the main lymphatic spread of any rectal growth is in an upward direction While a low growth may also spread laterally and downwards it is uncommon for a high growth to do so unless there is already extensive lymphatic involvement

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* Communicated to the Royal Society of Medicine, section of proctology, on May 10.

THE OPERATION

The operation of abdominal resection, which is only suitable for a growth in the upper part of the rectum, aims at the removal of the growth, its lymphatic drainage up to the aortic bifurcation, and some two inches of healthy bowel and mesorectum below it

It follows the usual lines of the abdomino-perineal The inferior mesenteric artery is ligatured and the peritoneum divided on either side of the rectum and in the pouch of Douglas The rectum is stripped forward from the sacrum, separated anteriorly from the vagina or the prostate and vesicles, and the lateral ligaments divided The rectum takes a somewhat curved course in its normal position, and, provided it has been properly freed, if it is now pulled upwards and forwards a growth which lay well below the sacral promontory may now lie almost in the abdominal wound With the bowel in this position the mesorectum on the posterior surface of the rectum is divided cautiously with long curved scissors as low as possible in the pelvis and at least two inches below the growth It is essential that the rectum should be properly freed before this is done, since otherwise a considerable part of the mesorectum may be left behind in the sacro coccygeal region There is no need to apply clamps before the division since there is little bleeding

Some flavine gauze is now packed into the pelvis and the rectum is drawn up and divided between clamps as low as possible The ampullary portion of the rectum is bulky and the clamps must be strong After trying a number of clamps I have come to the conclusion that the best is a Peyr's clamp, applied from before backwards and downwards, the handle over the pubes and not from side to side The distal stump is closed and invaginated

Drainage of the pelvis is probably wise in every case In the female it can be carried out through the posterior vaginal wall, in the male through the abdominal wound It may also be carried out through the ischio rectal fossa, though favoured by position, this is uncomfortable for the patient The pelvic peritoneum is now united over the rectal stump, the sigmoid divided at the desired site and a left iliac colostomy performed

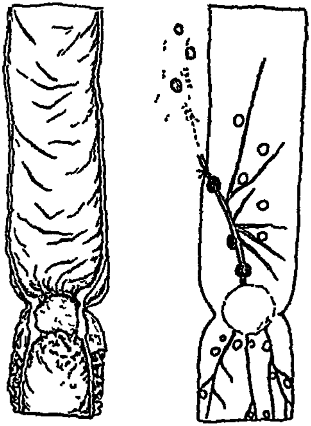
It is perhaps unnecessary to point out that the final decision as to whether a growth is suitable for abdominal resection can only be made when the abdomen is opened, and the surgeon must therefore be prepared to perform the abdomino perineal operation should this be indicated

DISCUSSION

Rankin (1929) described a series of 26 cases in which he performed this operation with 1 death, for which no adequate explanation could be found at autopsy I first used this operation for a rectal carcinoma some two years ago and I have now performed it on nine occasions I am convinced that it is a valuable operation for certain cases of rectal cancer

Since the greater part of the operation is essentially that of the abdomino perineal it cannot be claimed that it is easier or quicker to perform, but it is certainly attended with far less shock than a "combined" operation (abdomino perineal or perineo-abdominal) It is almost bloodless and there is no need to alter the position of the patient The patients' postoperative course is smoother, they can be more easily nursed, there is no perineal wound to dress; and they can move about as easily in bed as a patient after any other abdomi operation

Infection of the pelvic tissues from the rec stump is a possible complication, and in a m degree is probably common Rankin describes case in which an abscess formed and was drain through the rectal stump A similar complicati occurred in one of my cases and was treated in t same manner Blood and mucus may collect in t rectal stump and cause the patient discomfort this a catheter may be passed, or a drainage tub may be stitched into the anus at the time of operatio



Specimen of carcinoma of the upper third of the rectu removed by abdominal resection The diagram on th right represents the mesorectum after dissection, a illustrates the penetration by the growth and the positi and involvement of the lymphatic glands

Open circles glands sectioned and found free fro growth

Shaded circles glands believed to contain growth

Black circles glands sectioned and found to conta growth

A few inches of rectum are left Though unlikel it is possible that another growth might start in th part One of my patients, with a growth in the uppe part of the rectum, had some large piles excised tw months before I saw her Three months afte abdominal resection a small nodule was excised fro one of the hæmorrhoidectomy scars in the peri an skin and was found to be a nodule of adenocarcinom of the rectum An implantation from the rect carcinoma had undoubtedly taken place on one the raw areas at the time of the hæmorrhoidectomy

There is here no suggestion that this operation quite as good as a "combined" operation It doe not remove the levatores ani, nor their associate lymphatics, nor the fat in the ischio rectal fossa, an small glands in the lowest part of the mesorectum might be left behind in the sacro coccygeal region It does, however, remove the main lymphatic drainag of the rectum to the highest possible point It intended for the high rectal growth and here th lymphatic drainage is upwards, a retrograde sprea only taking place when the glands above ar extensively invaded by growth

The specimen shown in the figure is a rectu excised by abdominal resection, and has been take as an example since it was one of the more advanced cases in the series

The patient, a man of 67, had a somewhat adherent growth in the upper part of the rectum, with a history of two years. At laparotomy enlarged hard glands were present along the aorta and there was a small secondary in the liver. The growth was excised by abdominal resection and the specimen carefully dissected to show the lymphatic glands, all of which were sectioned. The growth had surrounded the lumen of the rectum and spread deeply, forming a mass of growth an inch in diameter in the mesorectum. Ten lymphatic glands were removed from the mesorectum below this level and none of these contained growth, though some of them were taken immediately below the point at which the growth had spread into the mesorectum. Above the growth only those glands in the direct line of the inferior mesenteric vessels contained metastases; those along the sigmoid were free.

INDICATIONS FOR ABDOMINAL RESECTION

(1) The growth must be in the upper third of the rectum. Since some 60 per cent. of rectal growths start in this site there is no need to suppose that this operation must have a very limited field

(2) The early high growth. This is the case in which an abdomino-anal operation with restoration of continuity might be considered if the essential anatomical provisions were present An abdominal resection would give an efficient removal in such a case and should be the operation of choice if the patient was a "doubtful risk" for a combined operation.

(3) Carcinoma of the upper third of the rectum in a patient unfit for a combined operation by reason of age, general condition, or an advanced and adherent growth. It is here that I believe the operation to be particularly valuable in that its use will raise the operability-rate of rectal cancer. It may be argued that no attempt should be made to remove an advanced and adherent growth. This is a matter of opinion; adhesions may be inflammatory and palpable glands are often free from growth. I do not consider that involvement of the bladder, or of one ureter, or even a small secondary deposit in the liver, should necessarily contra-indicate the removal of the primary growth.

RESULTS

A plea for this operation is that by its use more cases of rectal cancer can be submitted to excision.

Total cases of rectal carcinoma		40
Refused surgical intervention though operable ..	1	
Considered inoperable; palliative colostomy .	5	
Submitted to surgical excision	34	
Operability-rate (34 out of 39).. ..	87 1 %	
Total combined operations		18
Perineo-abdominal . . (3 deaths)	14	
Perineo-abdominal and Wertheim	1	
Abdomino-perineal	3	
Total deaths, 3 Mortality, 16 6 per cent		
Total perineal resections		7
(1) Low growth, poor physique		
(2) Palliative resection for hæmorrhage (Death)		
(3) Obese, myocardial degeneration, low growth		
(4) Low growth		
(5) Low growth Age 80		
(6) Auricular fibrillation		
(7) Paget's disease Age 68		
Total deaths, 1 Mortality, 14 2 per cent		
Total abdominal resections		9
(1) High growth, poor subject Age 71		
(2) High growth, obese		
(3) High growth, frail Age 66		
(4) Early high growth		
(5) High adherent growth		
(6) High adherent growth		
(7) High adherent growth, resection of portion of bladder wall and right ureter.		
(8) High adherent growth, small secondary in liver		
(9) Early high growth		
Deaths, 0.		

Short series of cases are to be deprecated, since the information they provide may be misleading. Yet if I am to attempt to substantiate this claim I can only do so by giving a brief summary of those cases of rectal cancer which have been under my care since I first used this operation some two years ago. During this period I have had 40 cases.

Mortality of abdominal resection—Rankin had a mortality of approximately 4 per cent Though there have been no deaths in this short series I have recently had a fatality after a somewhat similar operation for a carcinoma of the sigmoid loop involving the bladder. I believe, however, that the mortality of this operation is low, probably in the region of 5 per cent., even on a poor subject

Summary of results.—Out of 34 cases, 53 per cent have been submitted to either the perineo-abdominal or the abdomino-perineal operation, 26 per cent. to abdominal resection and 21 per cent. to perineal resection Excluding the patient refusing treatment, 87 per cent. of all cases seen have had excision with a mortality of 11·7 per cent ; or 76 4 per cent. of all cases seen have had their growths excised and have survived the operation

Prognosis of abdominal resection—This series is too small and insufficient time has elapsed to make any definite statement as regards the ultimate prognosis. One case has succumbed to another disease and was believed free from recurrence at death, another (the case quoted) had an implantation carcinoma in a hæmorrhoidectomy scar, but is otherwise believed free from recurrence 18 months after operation. A third patient had a small secondary in the liver at the time of operation The other six patients are alive and believed free from recurrence, but the longest time that has elapsed since operation is only 2 years and 4 months From a pathological standpoint, provided this operation is applied to a high rectal growth, I see no reason why there should be much difference between its ultimate prognosis and that of a combined operation.

CONCLUSIONS

Miles's conception of the amount of tissue that should be extirpated to ensure the most efficient operation for rectal cancer has more supporters now than at any time Whether this be performed by the operation which he originally described or the alternative perineo-abdominal route seems an almost immaterial point which may be left to individual taste. Apart from surgical skill and careful pre- and post-operative treatment, the selection of cases must remain a major factor in the mortality of these operations While it is probable that this is in process of reduction, unless the selection is confined to those in good health, of whom there are few with rectal cancer, it is unlikely that the mortality of such a surgical exercise can be below some 10–15 per cent

Abdomino-anal operations are occasionally possible This attempt to restore the continuity of the bowel requires a high and early growth and the anatomical provisions of a mobile sigmoid with a good blood supply Since suitable cases are not common, the operation of choice for rectal cancer must remain the abdomino-perineal or perineo-abdominal

However enthusiastic the surgeon, from time to time he will find patients upon whom, by reason of age or infirmity, he will hesitate to perform the operation. Fortune may smile on hazardous proceedings, but let us not invoke her aid too often if other measures are available. Mummery's operation of perineal resection has given many cures in rectal cancer, and if the growth is in the lower third or ampullary portion of the rectum it should certainly be removed by this method if the patient is unsuitable for a combined operation

Unfortunately the upper third of the rectum is a common site for carcinoma Age, obesity, a large and adherent growth, or simply the fact that the growth is at this site, may lead the surgeon to a palliative colostomy This may prevent obstruction and prolong life, but it does not rid the patient of the frequent call to stool and the passage of blood and mucus Radium and deep X rays are powerless in this matter and should rightly be eschewed as half hearted measures save in the most obviously inoperable growth Death from recurrence after surgery is far happier If surgery can do anything to reduce the number of these unfortunates, sentenced to death with such a troublesome and prolonged finale, it should surely do so It is here that I believe that abdominal resection of a high rectal growth, provided that it is efficiently performed, may offer to the patient an operation with less shock, an easier convalescence, a lower mortality, and an ultimate prognosis which, since the *main* lymphatic field is removed to exactly the same extent, can be but little lower than that for a combined operation

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SPECIFIC GRAVITY OF THE BLOOD IN PNEUMONIA

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IN the circulatory failure of a large variety of diseases concentration of the blood plays an important part The immediate cause may be great disparity between the gain and loss of water or deviation within the body of fluid from the circulating plasma The conditions with which hæmoconcentration may be associated have been reviewed by Marriott (1923) and others and more recently by Mandelbaum (1936)

A relationship between the severity of the infection and concentration of the blood was noted by Underhill and Ringer (1920) in patients suffering from influenza In 43 serious cases of influenza hæmoconcentration was present in the 28 who died but not in the others The authors suggested that this hæmoconcentration was caused by the dilatation of the capillaries in the lungs and by the subsequent pulmonary œdema which was a prominent feature of the fatal cases Underhill (1920) also described hæmoconcentration after the inhalation of phosgene as due to the same mechanism

A similar relationship was observed in patients suffering from cholera, when the intake of fluid was not sufficient to balance the greatly increased loss from the bowel Rogers (1921) found that during the acute stage of cholera of moderate severity there was an average loss of 52 per cent of the fluid of the blood, and in fatal cases 64 per cent This was calculated by measuring the proportions of serum and corpuscles Rogers concluded that the degree of dehydration could be assessed accurately enough for clinical purposes by estimating the specific gravity of the blood In nearly all of the cases of cholera observed by him the specific gravity of the blood was raised from the normal figure, for Indians, of about 1 054 to between 1 060 and 1 068 Most commonly the figure was about 1 063–1 065

We therefore estimated the specific gravity of the blood daily, as far as possible, and at about the same hour, in 54 consecutive cases of acute lobar pneumonia (42 men and 12 women)

NORMAL SPECIFIC GRAVITY OF BLOOD

The average specific gravity of the blood for healthy men was found by Schmaltz (1891) to be 1 059 and by Bamberger (1892) 1 0575 Leake, Kohl, and Stebbins (1927) report an average figure of 1 0568 Polowe (1927), using the same method (Barbour and Hamilton 1926), obtained almost identical results and remarked that the figures were 0 002 higher in the morning than at other times The specific gravity of the blood is said to be three or four degrees lower in women than in men There is less agreement about the limits within which the specific gravity of the blood may normally vary Peiper, quoted by Sahli (1911), considered the normal limits to be 1 045–1 066, but it seems to us that this wide variation is unlikely in health

TECHNIQUE

We removed 2 c cm of blood from a vein at the elbow and placed it in a dry test-tube containing a known amount of oxalate, measured by evaporating to dryness, at a low temperature, 0 4 c cm of a solution of ammonium oxalate 0 6 g and potassium oxalate 0 4 g in 100 c cm of water The specific gravity of the oxalated blood was then determined by Hammerschlag's modification of Lloyd-Jones's method, as follows

A mixture of benzol and chloroform of specific gravity between 1 050 and 1 060 is placed in a dry test-tube or cylinder A drop of blood is allowed to fall gently into the mixture, and, according to whether it sinks or floats, chloroform or benzol is added until the drop is exactly suspended in the middle of the column of fluid The specific gravity of the mixture is then determined with an ordinary urine testing hydrometer and is approximately the same as that of the drop of blood The latter should not be too large, otherwise it will break up, and care must be taken that it is not surrounded by an envelope of minute air-bubbles Such a drop should be ignored and another added After filtering, the mixture of benzol and chloroform may be retained for further use

The method described by Lloyd Jones, and used by Rogers, is essentially similar to the above, except that, instead of the benzol and chloroform mixture, separate solutions of glycerin and water of different specific gravities are substituted

RESULTS

Table I gives the results of estimating the specific gravity of the blood in a small number of normal or convalescent patients, estimated in our laboratory by this technique It will be noticed that these figures are more constant from day to day than those of our patients with pneumonia shown in table II

Table II shows the specific gravity of the blood during the acute stage of the illness in 54 consecutive cases of acute lobar pneumonia These have been described as "mild," "average," or "severe," according to the impression formed by one of us (J J E) on clinical grounds

In table III the cases of pneumonia are grouped according to the highest specific gravity of the blood recorded during the acute stage of the illness.

Only one patient recovered with a specific gravity of the blood over 1 062. His case-record is as follows:—

CASE 41.—A man, aged 34, had shivering and pain in the left chest of sudden onset while he was at work on May 20, 1938; May 21: admitted to hospital in a fair condition, very breathless, but not cyanosed, with profuse sweating, no labial herpes, occasional painful cough with purulent sputum containing type I pneumococci (Neufeld reaction), temperature 102° F, pulse-rate 106, respiration-rate 28, signs of consolidation at the left base, and a blood-pressure of 158/94; May 22: general condition much worse, with pallor, cyanosis, and sweating, pulse-rate 130, respiration-rate 36, profuse growth of type I pneumococci in 24 hours on blood-culture, and specific gravity of the blood 1 063, but improved considerably after treatment with antipneumococcal serum (Lederle's), type I, 120,000 units given intravenously; May 23: general condition improved, specific gravity of the blood 1·061, and further 40,000 units of serum given; May 24: further improvement, specific gravity of the blood 1·062; May 25: specific gravity of the blood 1 055, improvement being maintained, temperature falling by lysis to normal on May 28, and patient recovering.

The only other serum-treated cases in the series were the two described below

CASE 43.—A man, aged 36, was admitted to hospital on May 28, 1938, complaining of pain in the left chest of two days' duration, general condition being fairly good, with profuse sweating, dyspnœa but no cyanosis, infrequent cough with rusty sputum, signs of consolidation of the left base, pulse-rate 110, respiration-rate 28, temperature 102° F., blood-pressure 130/80, and specific gravity of the blood 1 060; May 29: general condition slightly improved, specific gravity of the blood 1 060, and blood-culture yielding type I pneumococci after 24 hours; May 30: general condition bad, patient being toxic, dyspnœic, and cyanosed, with specific gravity of the blood 1·057, type I antipneumococcal serum 80,000 units and 60,000 units being given; May 31: condition considerably improved, with specific gravity of the blood 1 055; June 1: improvement maintained, with specific gravity of the blood 1·057; June 2: specific gravity of the blood 1·054, temperature fell to normal by lysis, and patient recovered.

TABLE I—SPECIFIC GRAVITY OF BLOOD IN NORMAL OR CONVALESCENT PATIENTS

Case	Age	1st day	2nd day	3rd day	4th day
55	73	1 058	1 059	1 059	1·059
56	69	1 058	1·057	1 057	1 057
57	71	1 055	1 057	1 056	1 057
58	66	1·056	1 059	1·058	1 059
59*	60	1 052	1 049	1 050	1 050
60	53	1·054	1 054	1 054	1 055
61	43	1 055	1 057	1 055	1 055
62	53	1 052	1 052	1 052	1 052
63	64	1·057	1 058	1·060	1 057
64	40	1 059	1·059	1·059	1·059

* Gastric ulcer Hæmoglobin 60 per cent

TABLE II—SPECIFIC GRAVITY OF BLOOD IN ACUTE LOBAR PNEUMONIA

Case	Sex and age	Day of disease									Remarks
		2	3	4	5	6	7	8	9	10	
1	M 53	.	..	..	.	..	.	..	..	66	Died on 12th day
2	M 58	..	..	.	62	64	63		.	..	Died on 8th day
3	M 53	..	..	.	..	.		57	58		Died on 10th day
4	M 36	..	..	60	62	50	54	57	51	..	Severe illness
5	M 25	..		.		..	51	55	56	59	Average severity
6	F 60	..	.	55	53	54	..	.	..	.	Average
7	M 44	..	..	57	57	.		..	..	..	Average
8	M 36	..	..	..	63	60	.	.	..	..	Died on 7th day
9	M 42	..	.	..	56	55	53	58	..	..	Average
10	M 48	..	..		59	59	60	57	..	.	Severe illness
11	M 51	..	59	.	.	.	..	..	.	..	Died on 4th day
12	M 15	..		58	59	60	..	.	..	..	Mild illness
13	M 50	..	55	59	58	55	56	56	..	..	Average
14	M 33	..	..	.	57	57	57	.	..	..	Average
15	F 42	..	59	58	55	..	..	..	..	.	Average
16	F 25	..	..	59	55	55	..	..			Average
17	M 47	..	..		.	57	59	58	59	.	Average
18	M 31	..	..	.	.	59	57	56	54	58	Average
19	M 56	..	..	..	.	.	55	50	.	..	Died on 9th day
20	M 69	..		.		61	59	..	.	.	Died on 8th day
21	M 35	..	62	58	56	54	.	..	..	.	Average
22	M 59	..	63	60		.	..	.	.	..	Died on 5th day
23	M 34	.	..	57	57	58	.	57	56	..	Average
24	M 51	..	.	59	58	.	.	.	.	..	Died on 6th day
25	M 38	..	.	.	62	62	.	.	..	..	Average
26	M 27	.	.	..		55	56	55	.	..	Average severity
27	M 42	.		57	.	.		.	.	.	Died on 5th day
28	M 52	53	53	52	52	51	52	52	.	..	Average
29	M 39	59	57	60	58		.		..	..	Died on 5th day
30	M 21	.	59	57	.	57	58	57	.	..	Average
31	M 35	60	55	52	58	59	..	.	..	.	Average
32	M 36	.	..	.	57	60	.	..	59	58	Died on 11th day
33	M 21	..	..	..	57			.	.	.	Died on 6th day
34	M 33	..		58	57		.	.	..	..	Mild illness
35	F 43	..	56	51	57	54		..	..	.	Average
36	F 33	.	..	.	57	52	..		..	..	Mild
37	M 42	.	..	..	59	57	.	..	..	..	Mild
38	M 40	.	.	.	..	54	53	56	58	58	Average
39	M 38	..	..	..	.	54	52	57	53	..	Average
40	M 14	.		..	.		57	52	56	..	Average
41	M 31	..	63	61	62	55	..	..	..	.	Severe illness
42	M 18	.	.	.		53	.	..	..	..	Mild
43	M 36	.	60	60	57	55	57	54	.	..	Severe
44	M 35	61	60	55	57	62	.	.	.	..	Severe illness
45	F 10	..		..	.	55	53	..	..	..	Mild
46	F 63			..	..	55	53	.	.	.	Average
47	F 44	.	..	..	.	.		58	54	.	Average
48	F 57	..	..	.		55	52	51	52	.	Mild
49	F 66	.	.	.	.	56	60	62	59	..	Severe illness
50	F 66	..	..		57	60			.	..	Died on 6th day
51	M 16	..	.	..	56	57	56	56		.	Average
52	M 52	..	.	..		..	.	.	56	57	Died on 10th day
53	F 51	.	.	.	..	.	61	..	.	.	Died on 7th day
54	M 36	.	..	.	57	58	57	.	.	.	Average severity

The above figures are the third and fourth decimal points—e g, 53=1 053.

CASE 29.—A man, aged 39, was admitted to hospital on March 28, 1938, complaining of pain in both sides of the chest throughout the previous day, there being pallor, sweating, dyspnœa but no cyanosis, signs of [illegible]ation at the right base, temperature 103° F., pulse-rate 120, respiration-rate 40, and specific gravity of the blood 1·059; March 29: patient worse, very toxic, with cyanosis of nail beds, blood-pressure 94/68, pulse-rate 120–130, specific gravity of the blood 1 057, and sputum containing type I pneumococci, and was given antipneumococcal serum 60,000 units, March 30: no improvement, pulse-rate 130, respiration-rate 40–48, specific gravity of the blood 1·060, 190,000 units serum given; March 31: specific gravity of the blood 1 058, progressive deterioration, and death.

COMMENT

Since fewer estimations of the specific gravity of the blood were possible in some cases than in others, the highest figure recorded for each patient is regarded as the most satisfactory common denominator. Consideration of the highest figure for each patient in relation to the severity of the illness shows that the specific gravity of the blood was above 1 059 in only 4 (12 per cent) of the 32 mild and average cases, whereas figures over 1 059 were recorded at some period of the acute illness in 15 (68 per cent.) of the 22 severe and fatal cases Among the fatal cas the highest recorded specific gravity of the blood wa under 1 060 almost as often as not. Of the 14 patients whose highest figure was 1 060–1 062 only

4 died, but 9 were seriously ill. Of the 6 patients with figures of 1 063 or over, 5 died—a mortality of over 80 per cent compared with 30 per cent for the whole series, and under 25 per cent for the patients with a specific gravity of the blood of below 1 063 Thus the severity of the illness was apparently related to the specific gravity of the blood

An obvious explanation is the occurrence of dehydration, some degree of which is probably not uncommon Often there is difficulty in giving even a normal amount of fluid by mouth to patients with pneumonia Unfortunately, accurate measurement of the fluid output is usually impracticable because of the difficulty of periodically weighing sick patients It seems likely, however, that in the presence of simple dehydration severe enough to affect the specific gravity of the blood the urinary output would be more diminished than was found to be the case in this series

Another aspect of pneumonia to be taken into account is the condition of the peripheral vessels In the work of Perry (1934) and of Greene (1937) there is evidence that the capillaries are abnormal They are less able to remain contracted against distending pressures when affected by the toxins of the pneumococcus Peripheral circulatory failure in pneumonia and in other infections has been attributed to dilatation of the capillaries, with increase in the permeability of their walls (Ritchie 1931) This factor too may affect the specific gravity of the blood

TABLE III—RELATION BETWEEN SPECIFIC GRAVITY OF BLOOD AND SEVERITY OF PNEUMONIA

Specific gravity	Severity of disease				Group mortality (per cent)
	Mild	Average	Severe	Fatal	
1·053–1·056	42, 45, 48 (3)	6, 26, 28, 46 (4)	(Nil)	19 (1)	12 5
1·057–1·059	34, 36 37 (3)	5, 7, 9, 13, 14, 15 16, 17, 18 23, 30, 35, 38 39, 40, 47, 51, 54 (18)	(Nil)	3 11, 24, 27, 33 52 (6)	22
1·060–1 062	12 (1)	21 25 31 (3)	4, 10, 43, 44 49 (5)	29, 32 50, 53 (4)	30 7
1·063–1·066	(Nil)	(Nil)	41 (1)	1 2, 8, 20 22 (5)	83

The numbers in this table refer to the case numbers as recorded in table II

SUMMARY

(1) The specific gravity of the blood was estimated daily during the acute stage of acute lobar pneumonia in 54 consecutive cases

(2) The specific gravity of the blood tends to rise with the severity of the illness

(3) A high mortality was associated with a specific gravity over 1 062

We are indebted to Dr E C Hadley for permission to publish this paper.

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(*Continued at foot of next column*)

PNEUMOCOCCAL MENINGITIS

REPORT ON FIVE CONSECUTIVE CASES TREATED WITH SULPHANILAMIDE PYRIDINE (M & B 693)

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IN recording a case of pneumococcal meningitis treated with sulphanilamide pyridine (M & B 693) McAlpine and Thomas (1939) said they could trace reports of only 3 similar cases published in this country We think it may be of interest therefore to give an account of 5 consecutive cases treated in the past six months at St James' Hospital

CASE 1 —A man of 28 was admitted on Oct 27, 1938, having been ill for six days with delirium, he had previously recovered from a heavy cold He was very ill The temperature was 101 2° F, the pulse-rate 90, and the respirations 28 On examination of the lung there was a poor percussion note at the right base Cerebration was slow, the neck was rigid and Kernig's sign was positive The urine contained albumin + +, and lumbar puncture produced a heavily clouded fluid forming a clotted sediment on standing Immediate examination (R C M) revealed polymorphs in very large numbers and gram-negative diplococci, mostly intracellular A diagnosis of meningococcal meningitis was made and sulphanilamide was given (Prontosil album 1 g four hourly)

Next day he was somewhat better, there was slight cyanosis but chest was clear Temp, 100° F, pulse, 92, resp, 24 Twenty four hours after starting sulphanilamide a laboratory report on the cerebrospinal fluid (C S F) stated that it contained 5000 white cells per c mm, smear shows many cocci, some gram positive, but many "degenerated gram-negative forms On culture pneumococci, group IV" In view of this report the patient was put on M & B 693 (1 g, six hourly by mouth) In the two following days he improved On Oct 30 the temperature was settling and the dose was reduced to 0 5 g t d s, he was now quite cyanosed but not dyspnœic On the 31st he was afebrile and mentally normal though Kernig's sign was slightly positive The C S F on Nov 1 contained "some polymorphs, no organisms, no growth M & B 693 1 55 mg per 100 c cm" Chemotherapy was stopped, and the C S F. remained sterile, the patient being discharged recovered on Dec 1 The total dose over six days was sulphanilamide 6 g and M & B 693 12 g

CASE 2 —A man aged 50 was admitted on Jan 7, 1939, with a history of five days' vomiting, and partial loss of consciousness on the day of admission For over twenty years he had had deafness and a discharge from the ear, with attacks of vomiting lasting 6–8 hours, every few weeks Temp 97 1° F; pulse, 102, resp, 21 Semiconscious with appearance of cerebral irritation Neck rigid, Kernig's sign strongly positive, pupils equal and reacted to light, plantar responses flexor; knee jerks present and equal, ankle jerks absent Mr T B Layton reported that the "ears show evidence of chronic disease; the meningitis is probably not secondary to active

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ear disease." The C.S.F. was turbid and immediate examination of it (by a clinician) showed 5400 white cells per c mm.; on a stained smear there were gram-positive diplococci and polymorphs. A diagnosis of pneumococcal meningitis was made (later confirmed by the growth of pneumococci from C.S.F.) and M. & B. 693 1 g. six-hourly was given by mouth. The patient, however, showed no improvement and died twenty-six hours after admission, having received 4 g. of M. & B. 693 in twenty-four hours. At autopsy it was found that all the sulci over the vertex of brain on both sides were filled with a thick green pus; at the base of the brain there was congestion but no exudate. The middle ears were normal, the lungs were œdematous and the liver showed peripheral lobular necrosis.

CASE 3.—A man of 30 was admitted on Feb. 13, having had a severe frontal headache and vomiting for three days. He was rather ill; temp., 101° F.; pulse, 92; resp., 24. Neck rigid; Kernig's sign positive; ears and chest normal. The C.S.F. was cloudy and treatment with M. & B. 693 was started at once (1 g. six-hourly). Next day a laboratory report on the C S.F. stated that pneumococcus type III had been grown from it. By Feb. 20 the patient was clinically recovered and on the 23rd M. & B. 693 was discontinued. On the 26th, however, severe headache and fever recurred, and next day M. & B. 693 (1 g. t.d.s.) was again given. By March 6 the patient was better though he still had some headache. C.S.F. report: "colourless, turbid; 14,000 cells per c.mm. (lymphocytes 8 per cent., polymorphs 92 per cent.). Protein 200 mg. per 100 c cm.; globulin ++. No organisms; no growth." M. & B. 693 was discontinued on the 9th; there was still some fever but no headache. He was afebrile on the 13th and discharged on April 6, having had 40 g. of M. & B. 693 in the first ten days and 30 g. between the fourteenth and twenty-fourth days of his illness.

CASE 4.—A woman of 53. She was admitted on Feb. 26 having been ill for two days, with headache, pain in the right ear and restlessness. For a few hours she had been semiconscious. Temp., 104° F.; pulse, 94; respirations, 24. Pupils unequal, inactive to light; knee and ankle-jerks absent; right plantar response extensor; no stiffness of neck; Kernig's sign negative. Ears (Dr. W. L. MacCormac): "left normal; right, bulging of posterior meatal wall, intact drum." Chest clear; blood-pressure, 200/100; urine, sp. gr. 1035, sugar and diacetic acid present. The C.S.F. proved to be turbid and treatment with M. & B. 693 was started at once (2 g. statim; 2 g. in four hours' time; and then 1 g. four-hourly). Next day the patient was still semicomatose; the skin was moist, the breath smelt of acetone, and the pupils were dilated and equal. Pneumococci had meanwhile been grown from the C.S.F. She died 42 hours after admission having had 11 g. of M. & B. 693 in forty hours.

At autopsy the sulci over the vertex were full of thick green pus and there was a considerable layer of pus over the pons and medulla. The right temporal bone was infiltrated with thick green pus from which pneumococci were grown. There was also some hypertrophy of the left ventricle of the heart; the lungs were congested, and minute yellow points of toxic necrosis were scattered throughout the liver. Kidneys normal.

CASE 5.—A boy aged 6 was admitted at 5 P.M. on March 8, having been well till that morning, when he appeared sleepy, complained of headache, vomited once and gradually became stuporose. On arrival at hospital he was very ill (temp., 101° F.; pulse, 104; resp. 26). He was stuporose, cried out weakly, and was restless, irritable, and incontinent of urine. Neck very rigid; Kernig's sign positive; plantar responses flexor; *tache cérébrale;* scaphoid abdomen; no rash; tongue heavily coated; pharynx, ears, and chest clear. The pressure of the C.S F. was not obviously raised: 3 c.cm of very cloudy fluid was removed slowly, without affecting the clinical condition. Immediate microscopy showed many pus cells and gram-positive lanceolate diplococci. M. & B. 693 (1 g.) was given by mouth at about 7.30 P M., but the boy died suddenly at 10 P.M., five hours after admission and about fifteen hours from onset of the illness. At autopsy fourteen hours after death the meninges at base of brain showed a little haziness; those over the convexity of cerebral hemispheres were pale and dry with no exudate. The convolutions were swollen and the sulci obliterated; on section the brain was very pale; the ventricles were only slightly dilated. The middle ears were normal: the bronchi contained tenacious mucus and there was congestion of the right middle and lower and left lower lobes. Tuberculous (caseous) deposits were found in the mediastinal glands and the lymphatic tissues were generally prominent. The kidneys were congested and the liver œdematous. Culture of meninges from the base of the brain gave pneumococci; culture from the bronchi gave *Bacillus coli* and non-hæmolytic streptococci, but no pneumococci.

The fact that 2 of these 5 cases of pneumococcal meningitis treated with sulphanilamide-pyridine (M. & B. 693) recovered is in accord with the impression that this drug has greatly improved the prognosis in this disease

Case 1 illustrates the fact that an immediate differential diagnosis between the various forms of purulent meningitis is not always easy. For this reason, and because—apart from its superiority in pneumococcal infections—M & B 693 is at least as effective as sulphanilamide against meningococcal, streptococcal, and staphylococcal infections (Whitby 1938), we decided to give it at once in all cases of suspected meningitis in which lumbar puncture revealed a cerebrospinal fluid which was cloudy or showed a pleocytosis with organisms present In cases 2, 3, 4, and 5, therefore, M & B 693 was given from the start.

In the 3 fatal cases (Nos 2, 4, and 5) death took place respectively, twenty-six, forty, and five hours after admission. In case 2 the patient was admitted semiconscious and received moderate though not heavy doses of the drug. In case 4 fairly high doses were given but there was no response. Only one dose was administered in case 5 and in this case the post-mortem picture was unusual in that the convolutions were swollen, compressed and pale, with no exudate.

We wish to thank Sir Frederick Menzies, medical officer of health for the county of London, and Dr. W. L. MacCormac, medical superintendent of St. James' Hospital, for permission to publish these cases; also Dr. A. P. Piggott, deputy medical superintendent of the hospital, for facilities and help in collecting these cases.

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A FATAL CASE OF PNEUMOCOCCAL MENINGITIS

TREATED WITH M & B 693

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A MALE, aged 2½ years, was admitted to St. George-in-the-East Hospital on Jan 1, 1939 Apart from measles at 1½ years the previous history was negative He had been ailing for a month but was "worse today."

The temperature was 97.6° F., the pulse-rate 140, and the respirations 40. The child, who was very ill, appeared small for his age (not weighed). There was cyanosis and laboured respiration with expiratory grunting. The chest showed restricted movement and dullness on the right side with tubular breath-sounds at the base. The left side of the chest was hyper-resonant. The heart was dilated with a "pleural" friction near the apex-beat. A clinical diagnosis of consolidation of the right lung and ? pericarditis was made. There was no radiographic examination. The child was nursed in an oxygen tent and given M. & B. 693 0.5 g., followed by 0.25 g. every four hours.

The patient was moderately happy in the tent. The colour improved and the respirations, although still rapid (36–64), became easier. He drank well. The temperature remained normal and on Jan. 4 recovery appeared possible. There was evening fever on the 4th and 5th and the morning temperature on the 6th was 103° F. The right chest was explored in two places with negative results. Later that day there was a generalised convulsion lasting two minutes. At this time 8.5 g. M. & B. 693 had been given. Restlessness now made nursing in the tent difficult and a second fit occurred at 11.30 P.M. The clinical picture of meningitis was obvious on the 7th. The cerebrospinal fluid (when 9.5 g. M. & B. 693 had been given) was opaquely turbid. Its analysis showed:—

Cells	860 per c.mm.—	Lymphocytes	64 per cent.
		Polymorphs	29 per cent.
		Endothelials	7 per cent.
Chlorides	*625 mg. per 100 c.cm.*		
Gram film	Masses of gram positive diplococci		
Culture	Pneumococcus, type X.		
M. & B. 693:	3.4 mg. per 100 c.cm.		

The blood showed anæmia (hæmoglobin 52 per cent. Sahli) and leucocytosis (white cells 46,500 per c.mm., 90 per cent. polymorphs).

The classical pre-M. & B. 693 course followed. Lethargy, coma with relaxed sphincters and limb paralysis. Inability to swallow necessitated stomach feeding on the 8th, when the dose of *M. & B. 693* was increased to 0.5 g. four-hourly. Death occurred on the 9th. Permission for post-mortem examination was withheld.

The main difference between this and recorded cases with recovery (Reid and Dyke 1938, Robertson 1938, Cunningham 1938, and McAlpine and Thomas 1939) is that here meningitis complicated a chest infection. Meningeal invasion presumably occurred five days after the first dose of M. & B. 693 when a concentration, sufficient for cure in McAlpine and Thomas's case, already existed in the cerebrospinal fluid. In none of the earlier cases was the drug given before the second day of clinical illness. Other differences are the age, the youngest previous case (Reid and Dyke) being 7 years, the cerebrospinal fluid concentration (Cunningham achieved 8.5 mg. per 100 c.cm.) and the fact that the child had severe pneumonia from which he had not yet recovered. In view of the efficacy of M. & B. 693 with equally young children receiving comparable doses for pneumonia, and the initial improvement in this child, it seems that previous medication may have made the fatal difference. This assumes a rapid acclimatisation of the pneumococcus to M. & B. 693, experimental evidence for which was recently published (Maclean, Rogers and Fleming 1939).

Clinical confirmation that 693-*fastness* can be acquired would mean that the prognosis is hopeless when meningitis complicates a pneumococcal lesion treated with M. & B. 693. In that case it is to be hoped that the drug will reduce the incidence of a complication which is, happily, already rare.

I am indebted to Sir Frederick Menzies, medical officer of health for the county of London, for permission to publish this case.

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PNEUMOCOCCAL MENINGITIS

TREATED WITH M. & B. 693

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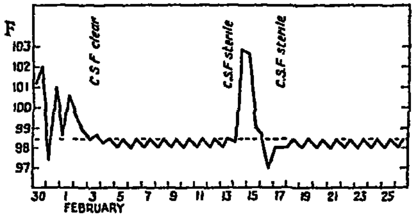
A RECORD of all the cases of pneumococcal meningitis at the General Hospital, Johore Bahru, during 1936–38 is as follows:—

1936: seven admissions and seven deaths.
1937: four admissions and four deaths.
1938: four admissions and four deaths.

Hence the following case may be of interest in more respects than one.

A male Tamil Hindu coolie, aged 34, was admitted on the morning of Jan. 30 with a history of fever with rigors for three days and unconsciousness for twelve hours. The pupils were semi-dilated and reacted sluggishly to light. Kernig's sign was positive.



Temperature chart showing relapse immediately after treatment with M. & B. 693 ceased on Feb. 13.

The temperature was 101.2° F., the pulse-rate 80, and the respirations 27. Lumbar puncture yielded a turbid fluid under pressure, showing 61 cells per c.mm., mostly polymorphonuclear. Direct smears stained with Gram and Ziehl-Neelsen revealed no organisms, but pneumococci (type not determined) were grown on culture. No primary focus of infection in the lungs, ears or sinuses could be found either on clinical examination or later by radiography.

Treatment and course.—Lumbar puncture was performed once daily, allowing the cerebrospinal fluid to drain as much as possible; it never became too thick to flow through a needle of ordinary size. M. & B. 693 2 g. was given soon after admission and then 1 g. three-hourly. The tablets were crushed in milk and administered through a nasal tube until the patient was able to take them by mouth. The temperature, as shown on the accompanying chart, reached normal on Feb. 2; from Feb. 1 the patient was sitting up in bed taking feeds by mouth and answering questions intelligently; from Feb. 4 he looked normal in every way; and on Feb. 13 culture of cerebrospinal fluid was sterile. From the 8th onwards the dosage of M. & B. 693 had been reduced to 1 g. three times a day, and the drug was withdrawn on the 13th.

Relapse.—Next morning the patient complained of very severe headache. The temperature was normal, and there was no rigidity of the neck, but a suspicious Kernig By 2 P.M. the temperature had started to rise, with signs and symptoms of extreme meningeal irritation, and lumbar puncture yielded a very turbid fluid under tension. A direct smear, gram-stained, was crowded with pneumococci, and their presence was confirmed on culture. By evening the temperature had reached a maximum of 102 8° F., but with chemotherapy it fell promptly and from the following morning the patient had no further fever. Lumbar puncture and drainage continued, and on the 17th the fluid was again clear and sterile. The initial dose of M. & B. 693 during the relapse was 2 g. and it was followed by 1 g. three-hourly until Feb. 19, after which the quantity was reduced, the treatment being finally discontinued on the 27th.

According to the manufacturers the maximum dose of M. & B. 693 required in the treatment of pneumonia is 20 g This patient with meningitis received a total of 80 g, but as soon as the drug was withdrawn he had a sharp relapse, appearing more severe than the original attack The relapse was treated on the same lines and the control obtained was even more dramatic than before; the drug was withdrawn less abruptly and a total of 75 g was given. The patient is taken to have been cured, and no sequelæ are evident. Nor were any ill effects from the drug detected.

It seems remarkable that in a cerebrospinal fluid rendered sterile by chemotherapy the pneumococcus should multiply in such enormous numbers as to produce symptoms within a day of withdrawal of the drug. As I have said, no focus of infection could be found elsewhere.

I am indebted to Dr. J. M. A. Lowson, physician to the General Hospital, Johore, for his guidance and encouragement and to Dato Dr. G. H. Garlick, principal medical officer, Johore, for permission to publish the case.

DISPLACED RIBS

By W. A. Ball, M.B. Lond.

SURGEON TO PETWORTH COTTAGE HOSPITAL, SUSSEX

THE condition to be described is of interest because it is common in general practice and can be easily and quickly cured. The fact that many cases of so-called pleurodynia are really cases of a displaced, not a slipped, rib has not been described before so far as I know. One often comes across cases of ill-defined pain in the chest without physical signs of disease in the ribs, lungs, or heart. If one runs one's hand up the chest wall, one finds that one rib is more prominent than the others, that it is in a position which it would normally occupy if the chest were expanded excessively, and that the intercostal space below is increased in size The pain runs round the chest wall in that intercostal space as far as the costovertebral junction, which is tender on deep palpation. This pain can be cured by manipulating the rib in the usual way. It is so definite that one or two patients have come to see me a second time with the ready-made diagnosis that they have put their rib out again.

Ætiology.—This displacement can take place at all ages after childhood and in both sexes and all types. My youngest patient was a child aged 14, and my oldest a woman of 60. One patient was a huntsman in good training, and another an old woman [illegible] wore wasp-waisted corsets and took hardly any exercise There is always a history of injury or strain, and the patient usually says that he has strained himself by a slight, unaccustomed, or clumsy muscular effort There is often but not always a rheumatic diathesis. This does not contraindicate manipulative treatment, although the condition will not clear up so quickly and the manipulation will increase the immediate pain.

Symptoms.—In some patients who complain of pain in the chest it is either localised in, or radiating along, an intercostal space, and there is pain or tenderness at the corresponding costovertebral joint If one runs one's hand up the chest wall, one of the ribs will be found to protrude beyond the general line of the chest wall, and the pain is along the adjacent intercostal space, either above or below (usually below) the rib. This pain is accentuated by taking a deep breath, moving the shoulder, or twisting the body. In some cases it is a severe pain of the lumbago type, and in many cases it is enough to keep the patient awake. The rib is dislocated, or at least out of position on its costo vertebral axis; it is an accentuation of the normal pail-handle movement of the ribs that takes place to a limited extent on inspiration. I have had the condition myself, and it can be described as a feeling of diffuse pain in an intercostal space, made worse by moving the shoulder or twisting the body.

CASE 1.—A huntsman, aged 30, was holding in a restive horse, when the horse suddenly jerked away. He felt a sudden severe pain in the region of the fifth rib, could not continue on the horse, and had to return home. When I saw him he was in much pain and suffering from shock, and the fifth rib was definitely out of position. Manipulation at once relieved the pain, and radiography the next day showed no bony injury.

CASE 2.—A country postmaster, aged 45, who was used to working as a painter from time to time, called me to see him because he had strained his chest. His pain was so severe that he had been unable to sleep even after taking aspirin. The physical signs were as described above, and after I had relieved him by manipulation he told me that he had had an attack previously, which I had forgotten, and which I had then cured by manipulation, and he had thought that I could cure him again by the same method of "stretching."

CASE 3—The following account of a similar case is of interest because it was written by a dentist. I had manipulated him once before for a displacement of the fifth rib, which I had cured. He came to see me this time with a ready-made diagnosis of a similar condition. Since I was then writing this article, I asked him to write down a description of his symptoms and his own views on the case. The following is his account: "There was a violent fit of coughing in the middle of Friday night. On the Saturday morning a definite stiffness was felt between the shoulder-blades, and there was a sensitive spot about half-way down the sternum. There was not much discomfort; a golf-club could be swung without any discomfort, though there was a slight strain if the left hand was stretched round and above the right shoulder. There was, however, a definite feeling of stiffness across the back after lounging in an armchair for about an hour. I have no definite recollection of involving the left side in any unduly large strain. Possibly my working attitude with the right shoulder always held lower than the left might be a predisposing cause."

In this case the pain was not so acute as usual, and the rib involved was the third. Manipulation gave almost immediate relief.

Anatomy.—One usually looks upon the ribs as moving as a whole, but if they move as a whole each separate rib must move In each inspiration and expiration each rib moves about an axis which is directed somewhat downwards, passing through the costocentral articulation and the neck of the rib, and a little in front of the costotransverse joint To effect this movement there must be a movement at the articulation of each rib The articulations of the fifth rib, which we will consider throughout this description, with the vertebra are two the costocentral, which unites the head of the rib with the bodies of the fourth and fifth vertebræ, and the costotransverse, which unites the tuberosity of the rib with the corresponding transverse process At these articulations slight but distinct gliding movements take place At the costocentral joint the movement must be rotatory, whereas at the costotransverse it is a gliding in the concavity of the transverse process It seems that at one of these joints the articular *surfaces get locked* in a *position* of inspiration, and that opening up the joint spaces by manipulation enables the bones to spring back into the correct position The muscles that are of special importance are the pectoralis minor, which arises from the upper and outer surface of the rib near the costal cartilage, and the serratus magnus or anterior, which arises from the outer surface of the rib The digitation of the pectoralis minor goes obliquely upwards and outwards and will pull the rib into a position of excessive inspiration, whereas the serratus magnus goes obliquely backwards and downwards to the lower angle of the scapula and tends to correct this position when one is manipulating the body in the third manner or the second (see below)

Diagnosis is not very difficult, once the condition is recognised Other causes of pain in this region must be excluded by the usual methods, but in the case of a displaced rib there is no local tenderness or swelling, and in the most obvious cases in which manipulation would do harm—i e, a broken rib—there can be no excuse for failing to realise that the rib is unnaturally painful when the patient lies prone When the rib is normal—as in any lung condition—no harm can be done by manipulation

Treatment consists in manipulating the ribs as for reduction of ribs and for curing the vertebral pain in fixation of the costal vertebræ The methods have been garnered from various sources I usually perform as many of the manipulations as I can

(1) The patient lies prone on the examination couch or floor in a relaxed position The practitioner stands or kneels at the side and places the ball of each thumb on the costovertebral junction of the rib involved and on the corresponding rib of the other side With the weight of the body and arms slightly bent, a forceful thrust is given downwards and outwards Often the surfaces can be heard to separate with a click This is repeated up and down the whole length of the ribs

(2) The patient is then told to sit on a backless chair or on a chair that is turned sideways On examination the eversion may be found to have disappeared. If not, the following manipulations should be carried out The practitioner stands behind the patient, rests one foot on the chair, and places his knee on the affected costovertebral junction He grasps the patient's hands in his from behind, his palms against the backs of the patient's hands He inserts his elbows in front of the patient's elbows, and presses his knee upwards and forwards, while at the same time he presses backwards, downwards, and outwards with his hands and elbows rather in the manner of a man awaking from sleep It is an interesting thought that perhaps the reason for this "awakening" stretching is an instinctive loosening of the ribs after lying down asleep

(3) With the patient still on the chair, the practitioner, still standing behind with his knee against the patient's back, grasps the patient's elbows in his hands and pulls the elbows backwards against his knee

After these manipulations the patient is usually free from pain and the protrusion cannot be felt Otherwise the patient is told to return in about three days if there is still pain, because sometimes there is a rheumatic element, and there is a subsequent reaction.

SUMMARY

A condition of displacement of the rib that is common in general practice is described. It consists of an eversion of a rib in relation to the other ribs that is recognised by palpation and causes pleurodynia It can be cured by manipulations that are described.

I am much indebted to Dr J B Mennell, who taught me the second manipulation and made me realise the importance of manipulation in general practice

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF LARYNGOLOGY

AT a meeting of this section held on May 5 the chair was taken by Mr C A SCOTT RIDOUT, the president, and a paper on

Complications of Intranasal Surgery

was read by Mr WALTER HOWARTH It was perhaps surprising, he said, that untoward results were not more frequent, in view of the anatomy of the area A mere catalogue would be dull and depressing, and he would confine himself to points of interest and importance Adequate anæsthesia was essential and if it were to be local, cocainisation must be preceded by careful premedication, or severe syncope might occur at the onset A dry field went far to minimise accidents Mistaken diagnosis might cause complications He had seen a hæmangioma of the ethmoid mistaken for inflammation and diphtheritic rhinitis operated on for adenoids Influenza and other intercurrent disease might predispose to such complications as otitis media, sinusitis and tonsillitis No operation should be performed on a patient with a septic condition of the skin Perfection of technique was of the first importance, and details must be thought out most carefully, demonstration was far more instructive than reading The surgeon should see an expert perform an operation before himself undertaking it Errors arose from putting on to the intranasal route more than it could be expected to bear, and using it when an external operation was really needed In order to reach that last ethmoid cell the orbit or cranial cavity or cavernous sinus might be damaged No two ethmoids were exactly alike Limited and repeated intervention might prevent complications, but the tendency in this country was to succeed by one operation only if possible No ethmoidal operation was free from risk Sometimes the operation seemed satisfactory and yet the patient died of meningitis A remarkably free exposure could be obtained by a very small external incision, and often the scar was invisible The external operation, if more often used would increase the safety of the patient The anterior ethmoidal cells could not be satisfactorily dealt with by the transantral route The frontal sinus could usually be safely approached intranasally, but the sound must never be allowed to leave the ethmoid and approach the middle line where the cribriform plate was very thin. Rasps seemed to complicate the healing owing to exuberant granulations and the risk of scar-tissue formation. The intranasal operation on the maxillary antrum was very successful if a large opening were made below the intact inferior turbinate There was no need to open up the anterior angle of the antrum The nasal duct must be carefully avoided. Exploration of the antrum with trocar and cannula might cause blindness through damage to the optic nerve, but the curved trocar and cannula was a safe instrument The inferior turbinates were important structures which should be treated with great consideration and all essential tissues should be conserved as far as possible. Many disastrous consequences followed untimely intervention during inflammation. Much could be done with cocaine packs and probes and antral puncture, while cutting operations might cause severe septic destruction Traumatic conditions were often better left alone Anything that prevented aeration and drainage was likely to be harmful, and plugging was therefore to be deprecated Many cases bled freely and might need a light plug for a few hours, but it should always be removed the same day. Septal operations called for loose plugs in the lower part of the nose which could be removed in 24 hours

Mr. E. D. D. Davis emphasised the need for delicacy and care in intranasal operations. A clear view was essential, with good illumination and free use of a suction pump A blind operation was always undesirable It was quite easy to leave a swab in the nose. Injuries which had occurred in spite of careful technique affected the orbit, optic nerve, lacrimal duct and cribriform plate and roof of ethmoid He had collected 13 cases of perforation of the roof of the ethmoid. The bone was often made thin and brittle by polypi and suppuration The most vulnerable point was punctured when working under cover of the middle turbinate; it was relatively difficult to pierce the actual cribriform plate The posterior ethmoidal artery had a short intracranial course, and might cause severe hæmorrhage into the posterior fossa If a perforation was known to have occurred, the patient should be kept sitting up and plugging must be avoided. The symptoms of perforation were collapse and shock with slow recovery from the anæsthetic, intolerable headache, drowsiness, escape of cerebrospinal fluid and blood in the lumbar-puncture fluid. Damage to the orbit caused proptosis and ecchymosis near the inner canthus These cases did well if they were left alone and the eye were bandaged with a little pressure—but not enough to ulcerate the cornea Orbital abscess must be opened; it caused fever, increased pain and œdema, and fixation of the eyeball. Five cases of injury to the optic nerve which were on record were all on the left side —as were also the orbital injuries, on account of the position of the operator. The danger lay in direction of the forceps outwards There might be an abnormality of the optic nerve, bringing it exceptionally close to the ethmoidal cells It was difficult to determine the exact injury; presumably it was crushed Avulsion with Luc's forceps was more dangerous than cutting off the top of the turbinate with scissors and snaring. Curettage of the nose was dangerous and unsatisfactory: it often caused osteomyelitis Optic atrophy had not followed orbital hæmorrhage He had only seen two cases of injury to the nasolacrimal duct. In one young woman blood came into the eye whenever she blew her nose.

Mr Musgrave Woodman called attention to the danger of infection of the septum from the antrum, leading up to the cavernous sinus The septum should never be touched when evacuating potentially infected sinuses around The other danger he wished to point out was apical infection around an incisor in septal operations. The tooth might appear normal, or the infection be regarded as irrelevant. The canines did not seem to have the same connexion with the lymphatics of the septum. Another danger was that involved in washing out the ethmoidal sinus, which caused a number of accidents every year.

Mr D. J. Guthrie suggested as a possible cause of accident the absence of adequate cleansing toilet before operation. The mucosa was not prepared as the skin would be, and pus was washed out immediately before opening an antrum. Antisepsis after interference might be useful He agreed that direct injury into the cranial cavity occurred through the ethmoidal roof and not through the cribriform plate, which was very difficult to perforate Meningitis was usually the result of sepsis rather than direct injury. Some thought that intranasal antrostomy should be performed near the normal opening; antrostomy in the middle meatus region was often followed by damage.

Mr. W. S. Thacker-Neville thought there were not many accidents; the openers had had difficulty in collecting cases. Internal antrostomy was a most uncomfortable operation unless the tip of the inferior turbinate were cut off. Cutting did no harm, but the cautery destroyed cilia. Slight hæmorrhage into the orbit did not matter. The greatest danger was operating on acute cases and was now unnecessary. Short-wave diathermy had done away with the temptation, as it gave relief and often cured the patient altogether

Mr. T. Ritchie Rodger suggested absolute refusal to pack the nose after operation as a good way of avoiding accidents He had not used packing for many years Septal operations did not need it if the flap were replaced and Whitehead's varnish applied, and careful anæsthesia were combined with adrenaline.

Mr. Herbert Tilley described his own experience of cauterising the inferior turbinate, with subsequent quinsy He had seen a case in which a cannula had been passed into a left suppurating frontal sinus and a little air had been injected The patient had become hemiplegic for about ten minutes—presumably from air embolus He agreed that it was a mistake to pack, except in submucous resection, after this he supported the slack mucosa for 24 hours by a pack of gauze inside a fingerstall

Mr. T B. Jobson said he used packing with 10 per cent Argyrol in simple antrostomies, and had had no trouble of any kind; the opening was undoubtedly better maintained thereby.

The President agreed, on the great value of the external operation.

Mr. Howarth, in reply, said he did not think it necessary to cut off part of the inferior turbinate He agreed that packing should be avoided in everything except the septal operation.—Mr. Davis, also in reply, said that hæmorrhage into the orbit was very distressing to the patient. He was sure the spoon was a mistake He had abandoned Whitehead's varnish because of hæmatoma

REVIEWS AND NOTICES OF BOOKS

Spinal Anesthesia

By LOUIS H MAXSON, A B , M D , formerly chief anesthetist to Harborview Hospital, Seattle London J B Lippincott Company 1938 Pp 409 30s

THIS book gives one of the most complete presentations of the principles and practice of spinal anæsthesia that we have yet seen in the English language Only two methods are omitted and these are perhaps not strictly within the scope of spinal anæsthesia injection into the sacral hiatus and paravertebral and parasacral injection The book starts, after a historical survey, with a careful and well illustrated account of the anatomy of all the structures concerned in spinal analgesia—the vertebral column, the cord and its coverings, the cerebrospinal fluid and so forth In this chapter there is a special warning of the effect that spinal injection may have on the accelerator nerves of the heart, an effect which is often overlooked when high spinal block is under discussion The physical aspects of the method are discussed in detail, with their bearing on the different techniques recommended by various authorities It is made plain that many conceptions, such as that of rapid mass movement of spinal fluid for example, are faulty, and that dispersion, convection and diffusion, in which gravity plays its part, are alone responsible for the shifting of the anæsthetic from the point of injection to other points in the spinal canal By dispersion the author means mechanical mixing from the force of the injection or from the churning action within the spinal canal The proper value of experimental work on animals whose spinal content of fluid is much less than that of man and of glass tube experiments is assessed in this chapter Dr Maxson seems to regard absorption into the circulation as negligible unless large doses are used and spread over a considerable surface of nerve tissue, and this is in accord with general experience Coming to the actual practice of spinal injection he gives details of a number of techniques, pointing out their various merits and disadvantages and giving his own preference For abdominal anæsthesia the patient is placed on his back directly after injection, if the anæsthesia is required beyond the umbilicus the table is placed at a 10° Trendelenburg angle, being levelled again when anæsthesia reaches the desired height For perineal anæsthesia the patient is kept sitting for four minutes after injection

A discussion of the effects of anæsthesia, technical difficulties, total and segmental anæsthesia and a number of other topics complete the book It deserves the careful study of every anæsthetist who employs spinal methods, for its author has not only wide experience and admirable judgment but an open mind

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A Synopsis of Medicine

(7th ed) By H LETHEBY TIDY, D M Oxfd, F R C P, extra physician to the King, consulting physician to St Thomas's Hospital, London Bristol: John Wright and Sons 1939 Pp 1187 21s

CLINICAL teachers are mostly prepared to agree that a summary is helpful for revision purposes and that one compiled by an experienced clinician may be more serviceable than the student's incomplete notebooks The staccato style of this synopsis, which enables an amazing amount of information to be condensed into small space, is no bar to its usefulness for those with some medical background though it is difficult, and perhaps dangerous, for the student to assimilate facts in such concentrated form To sum up in its well known pattern one might say—

LETHEBY TIDY (*Baedeker of Medicine*)

USES —Numerous Popular with (1) Practitioners —to refresh memory, (2) Teachers, especially medical registrars before ward rounds—to avoid omissions, (3) Candidates for higher exams such as M.R C P —often as a Compulsion Neurosis, (4) Students—apt to be confusing

FIRST WRITTEN.—1920 Six editions since, last in 1934

RECENT ADDITIONS —Many, especially (1) Blood, rewritten, good, (2) Endocrines, as up to date as is safe *Sulphonamide in, M & B 693 not*

OMISSIONS —Some, but few *Postural Drainage in treatment of Lung Abscess Relation of same to Carcinoma of Bronchus Chronic Constrictive Pericarditis, as such*

TREATMENT —Clear Emphasis naturally difficult Might adopt the star system of Baedeker with advantage Index good, Charts, few but helpful, especially Acute Gomerular Nephritis

GENERAL IMPRESSION.—Good, though a few authorities disagree

PROGNOSIS —Good

Principles of Medical Statistics

(2nd ed) By A BRADFORD HILL, D.Sc , Ph.D , reader in epidemiology and vital statistics in the University of London at the London School of Hygiene and Tropical Medicine London *The Lancet* 1939 Pp 189 6s

THE call for a second edition of this book within two years is evidence of the skill with which the author has performed his difficult task—namely, the interpretation to the unmathematical of the principles involved in a type of argument that must of necessity take a numerical form We note his approval of our definition of statistical method as "arithmetic guided by logic" His success has no doubt been due primarily to the fact that logic is given pride of place The arithmetic is presented throughout as arithmetic in use, in which form it is less obnoxious to those whose ability to deal firmly with figures has decreased, slowly but surely, from the time they left school Throughout the book we are presented, in words, with the kind of problem to which we are accustomed Is a specific antipneumococcal serum effective in the treatment of lobar pneumonia, and, if so, is it equally effective at different ages? What is the effect on miners of the inhalation of anthracite dust? What are the results of different methods of treating cancer of the cervix, or pulmonary tuberculosis? Are the available methods of prophylactic immunisation likely to be effective in lessening the incidence of a particular infective disease? The arguments involved are then expanded, and given precision, by a consideration of the assumptions on which they are based If an estimate of the value of antipneumococcal serum is being based on the recorded fatality-rates in groups of treated and untreated cases, we are assuming—and it is often a very unsafe assumption—that the two groups are alike in every relevant respect except that serum was or was not given If we are trying to assess the relative value of different methods of treating carcinoma of the cervix, say, by operation or radium, by comparing the records of two hospitals or clinics, we are assuming (among other things) that the criteria adopted for classifying the cases, when first seen, into different orders of severity are identical in the two groups and experience suggests that they are often different. When an argument of this kind has been given its logical development in words, Bradford Hill shows us how to put it into the more convenient numerical form, and how to record our data in ways that make it easy to frame numerical statements that are unambiguous. There are chapters on the more important statistical methods that provide the investigator with a convenient mathematical shorthand for stating his conclusions and the limitations to which they are subject. He is shown, simply and clearly, how to calculate a standard error, or a correlation coefficient, *and how to handle the* χ^2 *test. In the present edition* Dr. Hill has added a chapter on the methods of calculating standardised death-rates, and has illustrated by further examples a few points which had been found to cause difficulty to some readers.

Recent Advances in Chemotherapy

(2nd ed.) By G. M. Findlay, C.B.E., M.D, D Sc. Edin., Wellcome Bureau of Scientific Research. London: J. and A. Churchill. 1939. Pp. 523. 21s.

This book gives a masterly summary of the advances that have been made in the subject during the last decade. It deals with practically all aspects and the various chapters cover the chemotherapy of helminthic infections, amœbiasis, leishmaniasis, malaria, trypanosomiasis, syphilis, tuberculosis, leprosy, acute bacterial infections, and virus infections. Reference to any particular branch of chemotherapy is facilitated by the division of the chapters into numerous subsections, each being followed by its own list of appropriate references.

Since the previous edition appeared in 1930 one of the most important and striking developments in medicine has been the introduction of the sulphanilamide compounds. How widespread has been research in this subject may be judged by the fact that the section dealing with the chemotherapy of the acute bacterial infections occupies five times as many pages as in the previous edition The chapter on the therapy of trypanosomiasis has also undergone expansion and reorganisation in view of the great amount of work that has been done during the past ten years in this disease on the mechanism of action of drugs and the problems of drug-resistance Similarly, important developments in synthetic antimalarial drugs, notably the introduction of Atebrin, have produced much new material for the *chapter on the chemotherapy of malaria.* Increases in these and other sections have been compensated for by elimination of much of the older material in the original edition. *In fact so great has been the* pace of chemotherapeutic research that the present edition provides what is *essentially* a new book. The few errors it contains, as for example that in the structural formula of Plasmoquine, are but typographical slips

The book will be not only indispensable to workers in chemotherapy, but of the greatest value to all practising physicians at home and abroad who wish to use these new chemotherapeutic weapons safely, intelligently, and honestly.

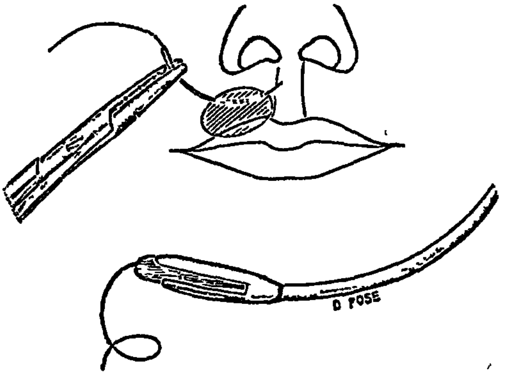
NEW INVENTIONS

RADON-SEED INTRODUCER

The accepted technique for inserting radon seeds in the treatment of surface lesions, such as cavernous nævi and rodent ulcers, leaves much to be desired. The various pointed trocars and "guns" in use all make a puncture much larger than the seed, which is thrust through their lumen into the puncture hole The puncture may bleed annoyingly, especially in those extremely vascular nævi for which the method is admirably suited. The seed, too, is but loosely retained in the puncture, and may come out prematurely, even while the others are being inserted. Accurate placing of the seeds is difficult; and, finally, unnecessarily ugly scars are left by the punctures.

The radon-seed needles shown in the diagram have been designed to overcome these disadvantages. There are two forms · the round-bodied for use in vascular lesions, especially in children, where the skin *is thin;* and the triangular pointed for use where the skin is thick or tough. The seed is held at the after end of the needle, just as the gut is held in a Souttar's intestinal needle; but loosely, so that it may be separated by a slight tug on its thread The needle is used in an ordinary holder, and is passed under or through the lesion as shown When the seed has entered the tissue and reached the required position, it is released by holding its thread firmly while the needle completes its journey. The relatively small gauge of the needles ensures that bleeding is minimal; and the needle may actually traverse even very vascular tumours without troublesome bleeding The seed remains securely in place, though it comes out sufficiently easily when deliberately pulled

These needles are the outcome of several experimental patterns made for me by Mr. Donald Rose, of 36, George Street, Portman Square, W 1, and tried out on many cases during the last two years. Straight needles were also tried, but proved much more difficult to manipulate When treating small lesions, it is necessary to pull the needle through somewhat gently, with a careful twisting movement. If pulled forcibly it may suddenly come through, bringing the seed right out at the point of exit The trick is, however, soon acquired, and the technique presents no other difficulties



The needles are made to take a seed of 1 1 mm external diameter, which allows for a screenage of 0 3 mm of platinum The standard length of the *seeds used is 6 mm, and at least 2 millicuries* of radon can be inserted into each if required, though my custom has been to work with 0 75 to 1 0 millicurie Seeds up to 1 cm long can be used with the same needles if desired.

E Stanley Lee, M S Lond , F.R C.S
Assistant surgeon to Westminster Hospital

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THE LANCET

LONDON SATURDAY, MAY 13, 1939

WERNICKE'S ENCEPHALOPATHY AND VITAMIN B_1

MOST morbid anatomists will remember examining a subject who has died with symptoms and signs pointing to an encephalitis whose nature has eluded clinical analysis. Although encephalitis lethargica is now almost extinct, the clinical diagnosis is still occasionally made in such cases, possibly for lack of a more suitable label. The post-mortem examination may fail to elucidate the precise cause of death: the brain is perhaps a little swollen and diffusely hyperæmic, other organs may show cloudy swelling, there may be chronic gastric disease or a chronic pyogenic infection. The tentative diagnosis remains "encephalitis" pending microscopical examination. But histologically there may be no frank evidence of encephalitis and the pathologist is on the horns of a dilemma. The brain is a bulky organ and he may have been unfortunate in his choice of blocks. On the other hand the clinical manifestations of brain disturbance may have been part of a toxæmia of undetermined origin with no selective effect on the brain cells. It is in these cases that the existence of Wernicke's encephalopathy should be remembered, and there is reason to believe that it is not infrequently missed at necropsies since the condition has been strangely ignored in this country. CAMPBELL and BIGGART[1] have collected no fewer than 12 cases in Edinburgh. Their description and analysis of this material provides not only a useful résumé of what is so far known about the condition but has led them to some interesting deductions concerning its pathogenesis.

The disease, otherwise known as acute superior hæmorrhagic polio encephalitis, was described by WERNICKE as long ago as 1881 and has generally been ascribed to alcoholism. In only one of CAMPBELL and BIGGART'S series, however, was an alcoholic history obtained. In their cases the symptoms persisted for periods ranging from 3 days to 10 weeks, and included drowsiness, apathy and incoherence, sometimes with temporary excitement and hallucinations; oculomotor disturbances were the commonest objective feature. The pathological changes are mainly remarkable for their curiously restricted localisation. The corpora mamillaria are constantly and may be solely affected, but symmetrical lesions have also been found in the hypothalamus, the medial parts of the thalamus, the peri-aqueductal grey matter, the colliculi, and the floor of the fourth ventricle. These lesions, usually visible to the naked eye as areas of congestion with or without hæmorrhages, are characterised microscopically by vascular proliferation accompanied by a variable amount of glial proliferation and an absence of inflammatory infiltration. The nerve cells are remarkably free from injury.

The pathogenesis of this rather specific disease of the brain is by no means settled and has been much disputed. It is closely related to Korsakoff's syndrome, with which it has, clinically, much in common, and has thus been attributed to chronic alcoholism. Many cases are however on record where alcohol could not be incriminated, and hence it has been plausibly argued that the encephalopathy is due to an endogenous toxin. In analysing the available evidence CAMPBELL and BIGGART find no very convincing support for either of these views or for the theory that anæmia is responsible. They point out the predominance of gastro-intestinal disease both in their own series and in cases reported elsewhere. Pregnancy, especially when complicated by hyperemesis gravidarum, is also an associated condition and is known also to be complicated at times with Korsakoff's syndrome. This association has recently been stressed by H. L. SHEEHAN (*Proc R Soc Med* 1939, 32, 584). All of these conditions, including chronic alcoholism, may be associated with polyneuritis, and this, we now know, can often be traced to a deficiency of vitamin B_1. It is therefore at least likely that Wernicke's encephalopathy is also due to a similar deficiency. Experimental support for this view was provided in 1934 by PRICKETT,[2] who produced foci of congestion, hæmorrhage and parenchymatous degeneration with the formation of compound granular corpuscles in the pons, medulla and cerebellum in rats by feeding them on a diet deficient in B_1. Moreover, last year ALEXANDER, PIJOAN and MYERSON[3] produced hæmorrhagic lesions in the basal ganglia and brain stem of pigeons in the same way. Against this argument, however, is the absence of Wernicke's encephalopathy in beriberi. Thus the operation of several agents may be required, but, as CAMPBELL and BIGGART suggest, a deficiency of vitamin B_1 seems to be the most likely common factor.

PROGRESS AGAINST PNEUMOCOCCI

WHEN the capacity of sulphanilamide for controlling hæmolytic streptococcal infections was found to extend even to meningitis, the last vestiges of scepticism about the new remedy gave place to astonishment and conviction. With the advent of M. & B. 693 last year it was at once recognised that a precisely parallel test awaited this drug, for pneumococcal meningitis is almost always fatal, and its cure would be an unequivocal achievement. Success of this kind has now been reported in a number of cases,[4] and more are added by three papers in our present issue. These communications have the merit of presenting both sides of the picture, for of the total of 7 cases described only 3 recovered. It is notorious and only natural that unexpected success gains more publicity than expected failure, and the 5 cases with 2 recoveries reported by Dr. MACKEITH and Dr. OPPENHEIMER probably give a truer picture of what is to be anticipated from this treatment than may be gained from enthusiastic accounts of single cases. Dr. KENNETH MAY suggests that the failure he reports may be attributable to the pneumococcus becoming resistant to the drug; which would mean that the treatment of meningitis complicating pneumonia which has already been treated with M. & B. 693 is likely to be hopeless. There are certainly features in some case-records consistent with bacterial escape from chemical control after several days of comparative suppression, but Dr. RAMAN's case encourages one to hope that such relapses are not beyond control, perhaps by massive doses. Whether bacterial drug-resistance is the true explanation of the failures cannot yet be known, but there is every reason to advise the most vigorous possible treatment in the first few days with the object of sterilising the meninges. In view of the incompleteness and variability with which the drug is absorbed from the alimentary tract the injection of its more soluble sodium salt might enable the attack to be launched with greater speed and vigour; but this remains to be seen.

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[1] Campbell A. C. P., and Biggart, J. H., *J Path Bact* 1939, 48 245

[2] Prickett C. O., *Amer J Physiol* 1934, 107 459

[3] Alexander, L., Pijoan M., and Myerson A. *Trans Amer neurol. Ass* 1938 (in the press)

[4] See for example H. F. Robinson, *Med J Aust* March 18 1939 p 433; M. Cutts et al *J Amer med Ass* April 15 1939 p 1455; A. P. Yule, *Brit med J* April 22 1939 p 812

We have referred more than once to the mixed reception M. & B. 693 has had in America; there have been elements in it not only of scepticism but of positive indignation at the incompleteness of the data that accompanied it across the Atlantic. But the proof of the pudding is in the eating, and there are further indications that "sulfapyridine," as it is officially called over there, has not belied its promise. Science Service reports[5] Dr. PERRIN H. LONG as saying that it has "cut the pneumonia death-rate at the Johns Hopkins Hospital by two-thirds." A. T. WILSON and collaborators[6] have made a careful study of its effect on pneumonia in children, and their conclusion, well founded statistically, is that it shortens the course of the disease by between three and four days. Another study of pneumonia with striking results is reported from Canada by GRAHAM, WARNER, DAUPHINEE and DICKSON.[7] It embraces three groups, each of 50 patients, severally receiving Dagenan (M. & B 693), serum, and no specific treatment, the deaths in the three groups numbered 3, 6, and 12. Alternate cases of infection with pneumococcus types I, II, V, VII and VIII were given serum, but the drug-treated group includes infections by other types, and to that extent it is not strictly comparable. On the other hand it included the highest number of cases with bacteræmia—17 with only 3 deaths—whereas in the serum-treated group there were 7 such cases with 4 deaths and in the controls 11 with 5 deaths. This comparison of chemo- and sero-therapy, to the latter's disadvantage, is the first of its kind, but if it should seem to threaten the extinction of serum treatment for pneumonia be it remembered that once the requirements of experimental study are satisfied, there will be no reason, apart from trouble and expense, why the two remedies should not be associated.

The authors of these two last papers confirm previous observations that the concentration of the drug attained in the blood is very variable. This was also observed by MEAKINS and HANSON[8] in a series of 30 cases of pneumonia which were treated with only 1 death. They suggest that these variations may be due to different degrees of conjugation of the drug, and the same idea is put forward by BRYCE and CLIMENKO,[9] who add both clinical and experimental observations to show that the extent of conjugation varies with the basal metabolic rate. All who have studied the subject seem to agree that optimum dosage has yet to be defined and that the behaviour of the drug in the body needs further investigation. As we have already pointed out, a method of administration more certain and rapid in its effect seems also to be needed in some cases, and the first two American authorities quoted here have in fact given the sodium salt intravenously in order either to secure a quicker action or to obviate nausea and vomiting. These are evidently directions in which the treatment may be improved and possible causes of failure defined.

INFECTIONS OF THE HAND

ON all sides one sees people with crippling deformities of the hands following infections simple in their origin; in some merely rigidity of the terminal joints, in others the loss of a finger or fingers, and in others a stiffening of the whole hand rendering it useless for all ordinary occupations. KANAVEL, a pioneer on this subject whose book has just reached a seventh (posthumous) edition,[10] quotes the records of the Industrial Accident Board of Oklahoma where of 60,600 partial disabilities 20 per cent. and of 900 complete disabilities 58 per cent. were due to injuries and infections of the hand. It is not stated what proportion of these disabilities was caused by infections as distinct from injuries The figure seems to vary between 20 and 75 per cent. according to the type of work, but differentiation is complicated by the fact that practically every infection starts as an injury, and most injuries become infected. As an illustration of what can be done in the way of prevention it is worth noting that precautions taken for the removal of broken baskets and exposed ends of wire reduced the number of infections from this source from 75 to 10 in one year. Arrangements for the immediate treatment of all injuries by a competent surgeon and for the early hospitalisation of cases where infection later develops are prophylactic measures that should be taken by all responsible for the welfare of workmen

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[5] *Science*, April 7, 1939 (suppl p 10)

[6] Wilson, A T, Spreen, A H, Cooper, M L, Stevenson, F E, Cullen, G E, and Mitchell, A G, *J Amer med Ass* April 15, 1939, p 1435

[7] Graham, D, Warner, W P, Dauphinee, J. A, and Dickson, R C, *Canad med Ass J*. April, 1939, p 325

[8] Meakins, J C, and Hanson, F R, *Ibid*, p 333

[9] Bryce, D A, and Climenko, D R, *J. Amer med Ass* March 25, 1939, p 1182.

[10] Infections of the Hand (7th ed) By Allen B Kanavel, M D, Sc D, late professor of surgery, Northwestern Medical School, Chicago London: Baillière, Tindall and Cox. 1939 Pp 503 30*s*

For the proper understanding and treatment of established infections anatomical study is essential, and this is the basis of KANAVEL's classic work. He shows how readily the bone of the terminal phalanx may necrose if pressure *has caused thrombosis of the artery of supply*, and this is one of the commonest events in pulp injuries He explains the route of spread up the finger and into the palm via the lumbrical canals, and the anatomical location of the potential spaces in the palm These spaces are situated deeply in the hand, behind the long flexor tendons and in front of the interosseous muscles and the adductor of the thumb The middle palmar space lies between the middle metacarpal and the hypothenar muscles and is liable to infection from a lesion in the three medial fingers, while the thenar space lies between the middle metacarpal and the muscles of the thenar eminence, and is liable to infection from a lesion in the index finger or thumb SPALDING[11] has carried out dissections and examined cross sections of the hand, and his work confirms the existence of *these two spaces*. The septum between them is in his view produced by a special thickening of the fascia along the radial side of the second lumbrical muscle, which he calls the intermediate septum of the hand It runs from the palmar aponeurosis in front to the fascia covering the adductor muscle of the thumb, thus gaining indirect attachment to the third metacarpal bone Apart from these two main spaces there are others between the muscles of the thenar eminence, and between the muscles of the hypothenar eminence, but these are of less importance as sites of secondary infection as they are definitely separated from the rest of the palmar structures BRICKEL,[12] in a new work on hand and forearm infections, agrees with KANAVEL on the main issues, but differs in his division of *the palmar spaces* He also has made injections of opaque material into different parts of the hand and fingers, but as the pressure used is not stated the two sets of experiments may not be comparable Nor is it certain that injections under pressure will necessarily follow the same course or be limited by the same structures as inflammatory exudations BRICKEL finds that his injections into the ulnar bursa (the expanded portion of the sheath of the flexor of the little finger) are apt to rupture into the palm, filling the whole palmar concavity, and to extend as far as the first lumbrical muscle, on the radial side of the index The thenar space of KANAVEL he believes to be nothing more than a dissection of the fascia from the surface of the adductor of the thumb, limited by its attachments. These minor differences of opinion on anatomy are perhaps not of great importance to surgeons, but they serve to remind us of the fact that pus can find its way into the palm, where its early recognition may be of crucial importance to the individual patient

Tendon sheath infections are probably responsible for more permanent stiffness than any other class of infection KANAVEL still advises a long incision along the lateral aspect of the digit, without stressing the dangers of prolapse and necrosis *of the tendon, or of its adherence to the scar* should it survive It is some years since ISELIN[13] pointed out that excellent drainage can be obtained in the three middle fingers by opening the sheath freely at its proximal end in the palm, with short incisions on each side of the digit opposite the flexion creases, thus preserving the stronger parts of the fibrous sheath, and preventing prolapse of the tendon In the thumb and little finger incisions have to be made above the wrist and in the palm, but long incisions on the digit are better avoided ISELIN's incisions give good functional results, and are worthy of more general trial

Of the other common infections of the hand, those spreading diffusely and rapidly along lymphatics form an important group All authorities are now agreed that incision is dangerous in this type of infection, but it is sometimes difficult to recognise when it is better to be conservative The effects of sulphanilamide in reducing the danger to life have not yet been properly assessed The responsibility of the practitioner is not ended when he has made his incision, or decided that an incision is not to be made The restoration of function should be his main concern Complete immobilisation should last only a few days, and even during this time the straight splint should not be used Active movements must be started as soon as the acute toxæmia is relieved, and later physical and occupational therapy of various kinds and psychotherapy should be carefully planned with the idea of enabling a man to return fully fit to his previous employment

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[11] Spalding J F *Guy's Hosp Rep* 1938 88 432

[12] Surgical Treatment of Hand and Forearm Infections. By A. C. J Brickel A.B., M.D. from the departments of anatomy and surgery Western Reserve University London: Henry Kimpton 1939 Pp 300 31s 6d.

[13] Iselin, M Chirurgie de la main, Paris 1933

“ I can only repeat what I said on another occasion—‘I do not believe that as a nation we cannot afford to be healthy’ At any rate, if it is finance, and finance only, that stands in the way, then let us be told so, and we can abandon the tedious process of flogging a dead horse by continuing to prove self-evident facts, and devote ourselves to the economic aspects Most of us are not economists, but we could learn enough not to be crushed by mere shibboleths For my part I should want to know whether the existing economic system in this country was for the benefit of the many or the few I should want to know whether it was really necessary that there should be such a large disparity between the cost of production of some of the so-called protective foods and the cost to the purchaser—why, for example, it should cost about three times as much to convey a cauliflower from Teddington to a poor woman in Tottenham as it did to produce it I should want to know whether it would not be possible to make such substances as cod liver oil available *for poor people generally at something like the* price at which they can obtain it in hospital When I knew all these things I should know whether the approach of the millennium of health was being retarded by vested interests, or whether one must continue to sigh for it only as an impossible ideal’—SIR NORMAN BENNETT, *Public Health*, May, 1939, p 231

ANNOTATIONS

PREVENTIVE MATERNITY WORK

LAST November the General Medical Council, in pursuance of its statutory injunction to regulate medical qualifications, resolved that throughout the whole period of study the attention of the student should be directed by his teachers (*a*) to the importance of the measures by which normal health may be assessed and maintained, and (*b*) to the principles and practice of the prevention of disease In pleading for a wider outlook in the teaching of obstetrics, Dr Fairbairn points out[1] that there is no subject which can so well afford opportunities for educating students in prevention as maternity and child welfare. Hospital services, he says, are reserved almost wholly for the sick and injured, so that the attention of the medical student is inevitably focused on curative rather than preventive practice. But midwifery, with its pre- and post-maternity clinics, comprises the early links of the chain of services aiming at betterment of the health and physique of the rising generation. Dr Fairbairn explains that he is not criticising the teaching given in obstetrics and gynæcology as such, but he finds some shortcoming on the part of teachers to bring home to their students the public-health, constructive, sociological and educational aspects of this branch of medicine.

The teaching of midwifery has always lagged behind the other parts of the medical curriculum Qualification in midwifery was not made obligatory for admission to the register until 27 years after the introduction of medical registration, and it took almost another quarter of a century to implement the part of the act requiring it. Recommendations of the General Medical Council as to attendance on labour were ignored, and the student fitted in his maternity cases at his own convenience. A step forward was taken in 1907, when the council adopted the report of the John Williams Committee which recommended, amongst other things, that clinical training in midwifery should not be begun until attendance at lectures and service as medical clerk and surgical dresser had been completed. The Maternity and Child Welfare Act (1918) laid on local health authorities the duty of providing maternity services, and a revision of the obligations placed on teachers by the council, issued in 1922, recommended instruction on antenatal conditions and infant hygiene, and continuous attendance on obstetrical hospital practice for three months The most recent revision, which came into force last November, was influenced to a considerable extent by the interim report (1930) of the Departmental Committee on Maternal Mortality and Morbidity Under the new regulations six months' whole time must be devoted by the medical student to hospital practice in midwifery, infant hygiene and gynæcology, two-thirds of the time being allotted to midwifery (including antenatal care and infant hygiene) and one-third to gynæcology Further, it is laid down that throughout the six months the student should receive practical training in antenatal and postnatal care, management of the puerperium and care of the infant Clearly such a scheme, Dr Fairbairn remarks, should be a consecutive lesson from pregnancy through labour and lying-in to the follow-up of mother and infant, with its continuity and singleness maintained into gynæcology. He urges the obstetric teacher to maintain an atmosphere so highly charged with the principles of constructive physiology that those principles shall become second nature to the student working in the department for six months The opportunity should also be taken to make the most of the educational and social side of antenatal supervision. Antenatal clinics attached to maternity hospitals are apt to consider prematernity care from the pathological side, looking out for actual or potential disorders. Clinics run by public health authorities with experience of baby clinics are more inclined to emphasise the physiological and hygienic aspect. Each, says Dr. Fairbairn, has much to learn from the other, but as yet contact between the two has scarcely begun. The patient should have a complete service, including not only obstetrical and medical antenatal supervision but also mothercraft and social services including visits when necessary Students should see antenatal care in its fullness, and where hospital provision is incomplete arrangements should be made for attendance at a public clinic The student is to become a family physician, and he should acquire the habit of studying each expectant mother as an individual, from the social as well as the medical standpoint.

The importance of educational and sociological work has been recognised by the Central Midwives Board in its new system of training for the midwives, who share responsibility for the care of maternity in this country. The various forms of maternity service available have hitherto been working with little liaison between them: a salaried domiciliary service should at least tend to unification For years the Ministry of Health has been giving attention to all aspects of obstetrical care Besides the more comprehensive training of students and midwives, the mothers themselves are being educated about the maternal functions, housing and social conditions have been improved, analgesics have been more widely used and antenatal work has been done on a large scale. The reward has begun to be reaped. The maternal death-rate for 1938 was 2·9 per 1000 live births, as compared with 4·4 in 1934, and England now stands second only to France (with a maternal death-rate of 2 3) among European countries.

POSTOPERATIVE PULMONARY COMPLICATIONS

THE contributors to a round-table conference[1] on postoperative pulmonary complications held in New York, each of whom approached the problem from a different point of view, illustrated well the diversity of opinion as to cause and prevention Holman stressed three contributory factors—hypovitaminosis, exposure to respiratory infection in the immediate preoperative period, and over-sedation after operation Cutler attributed pulmonary complications to embolism—the different forms depending on the size and infectivity of the embolus and variations in immunity. Beck discussed the factor of hypoventilation and retention of bronchial secretions Statements that all postoperative pulmonary complications are due to embolism or atelectasis contribute little to the solution of the problem, in fact they merely put it in a different form, since we do not know how to prevent either of these accidents The remedies proposed for prevention are numerous and vary according to which factors are regarded as important Most of these remedies are unnatural and many of them necessitate disturbance and discomfort to the patient To apply them all to one patient would be both barbarous and dangerous Yet if they are all of value why should not all be used? Surely the time has come to call a halt to these meddlesome therapeutics If operation or anæsthetic is the cause of pulmonary complications we should modify not the patient but the procedure which we inflict on him If after operation we harry him with frequent changes of posture, breathing exercises, CO_2 inhalations, injections of blood and saline, anticoagulants, antispasmodics, sympatheticomimetics and what not, what chance is there for nature to use the one remedy that she has proved of value That remedy is rest, and no surgeon has yet invented anything better

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[1] Fairbairn, J. S, *J. Obstet Gynæc* April, 1939, p 201.

[1] Holman, E, Cutler, E C, and Beck, C S, *Surg Gynec Obstet* April, 1939, p 335 (Internat abstract Surg)

UNIOVULAR TWINS OF DIFFERENT SEX

AN unusual case reported by Guldberg[1] shows how complicated are the theoretical possibilities in congenital malformations, and how difficult it is to decide between them Here one twin was a girl who weighed 3000 g at birth and has now developed into an attractive and perfectly normal child of 2½ years, the other was a female pseudohermaphrodite with a peniform organ canalised to the tip, who weighed 2650 g at birth and died on the fifth day from atresia of the rectum and vagina and the absence of a functioning renal system On the grounds of a single placenta and an anastomosis between the entering fœtal vessels, Guldberg takes for granted that the twins were uniovular and that separation took place relatively late In addition, the two babies were so alike at birth as to be indistinguishable when clothed According to modern ideas anastomosis of the fœtal circulations is indisputable evidence of monozygotism, and Guldberg does not discuss the possibility that binovular twins in a homozygotic population may be genetically so alike that there may be secondary fusion, as happens in freemartins It is a pity that so careful a report includes no comparison of the capillaries and fingerprints

The two usual explanations of intersexuality, a hormonal mechanism or a zygotic one, are both ruled out in this case Macroscopically and microscopically the endocrine glands were normal, and the anastomosis between the circulations was so free that both twins can be presumed to have had an identical hormonal environment during their period of growth A zygotic fault in the ordinary sense of the word is also impossible because of the normality of the surviving twin, who has been carefully examined The conventional explanation of differences between uniovular twins is the unevenness of blood distribution which results from circulatory fusion, but in this case the similarity of the birth weights excludes any gross unevenness of distribution, and in addition this type of abnormality is not seen in twins when a definite circulatory difference can be proved to have existed The possibility that a fault in the zygote only showed because of unfavourable intra uterine conditions seems unlikely, because the twins were otherwise in excellent condition and the family history, which is known in detail for four generations on both sides, contains no record of any similar abnormality Guldberg suggests that either the chromasomal material must have been unevenly divided, or that there must have been a mutation after division He favours the latter hypothesis, and in the light of our scanty knowledge of the changes in intracellular metabolism accompanying differentiation, probably his view will go unquestioned

WAGES DURING SICKNESS

THE decision of the Court of Appeal that an employee, when absent from work through ill health, is entitled to be paid full wages in addition to sickness benefit was noted in these columns at the time[1] In response to inquiries the Central Bureau of Hospital Information has circulated a valuable note on the legal consequences In the absence of any agreement to the contrary, a sick employee is entitled to receive his wages until his contract of employment has been terminated by proper notice in the usual way This right is not affected by the fact that he may also be receiving payments under the National Health Insurance Act This being the legal position in the absence of agreement to the contrary, hospitals can, in engaging new employees in future, make clear what the rule is to be with regard to payment of wages during sickness The bureau's note suggests a standard clause to be made a term of the contract of service Naturally it is better to have the point set out on paper since the exact terms of a merely verbal agreement are so readily disputed New staff taken on by a hospital (including domestic servants) would be asked to sign a note of the terms on which they are engaged The suggested clause is as follows —

> "In case of sickness or accident the wages payable to an employee by the hospital shall be reduced by the amount of sickness benefit received by him under the National Health Insurance Act or the amount of compensation received under the Workmen's Compensation Act After a period of three months' incapacity to work, the employment shall be taken to have been duly terminated unless the Board of Management otherwise directs"

The reference to Workmen's Compensation Act payments is an additional precaution The Court of Appeal thought that the amount of wages which an employee can claim when absent from duty through sickness or injury must be reduced by the amount received by way of compensation under the statute Workmen's compensation is in part based on the amount of wages, and the employee cannot both receive compensation for lost wages and have the wages in full as well But, as the bureau's note points out, an employee may not claim compensation, and anyhow he is entitled, until he does claim it, to his full wages up to the date when his employment is terminated by notice in the usual way

So much for staff engaged in future With regard to existing staff two courses are open Members of the staff who come within health insurance can be given formal notice to terminate their present contract of employment and can then be re engaged on the new terms with an express provision limiting the right to pay during sickness Or alternatively they can be invited to give up their existing right to full wages during sickness and to agree to some such condition as is set forth in the draft clause This variation of their existing position would not be binding unless they received something which the law calls "consideration"—a *quid pro quo* The bureau's note suggests a suitable *quid pro quo* Ordinarily an employee engaged by the week can, if he falls sick, be dismissed at one week's notice and so would not be entitled to more than one week's full wages in addition to his sick benefit If it were agreed that the hospital would in those circumstances make up his sick benefit to full wages for four weeks instead of one, this would be such an improvement in his position as to constitute a reasonable and sufficient *quid pro quo.*

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[1] Guldberg, E, *Acta path microbiol scand* 1938 (Suppl) 37, 197

[1] *Lancet*, March 18, 1939, p 645

HISTOLOGICAL CHANGES IN EPILEPSY

EXTENSIVE work has been done on the action of convulsant drugs on animals in the hope of throwing light on the pathogenesis of epilepsy, but so far little note has been taken of the changes in the central nervous system produced by such convulsions Opper,[1] working at the Yale University school of medicine, has induced convulsions in cats and rabbits by thujone (an isomeride of camphor) and monobromate of camphor. The animals received from three to ten injections each, the total duration of the experiments ranging from 1 to 94 days Post-mortem examinations were made immediately after death; in some cases this followed shortly after the last convulsion, in others there was an interval of several days. Macroscopically there were no gross changes in the central nervous system Microscopically the spinal cord showed no change, but in 23 out of 24 animals there were lesions in the brain, mostly confined to the cortex. The cornu ammonis and the cerebellum almost always escaped This observation is in contrast to the findings in human epilepsy, and so far as it goes militates against the "vascular" conception of epilepsy, by which it is assumed that the cornu ammonis so often shows sclerosis because it is poorly vascularised. Opper suggests, however, that the cornu ammonis may be more generously supplied with blood in these animals. Possibly the local sclerosis is a manifestation of old-standing epilepsy, and could hardly be expected in animals which had only had convulsions for a few days Cortical changes, which were rarely found in the occipital lobe, included areas of necrobiosis, sclerosis of the ganglion cells, petechial hæmorrhages and chromatolysis of nerve-cells. These changes can all be paralleled in human epilepsy. The fact that they were more marked in the animals which had had recent convulsions suggests that many of these acute changes are reversible, but the extent of the lesions bore no relation to the number or severity of the fits Generally speaking the nature and site of the lesions were consistent with the occurrence of ischæmia during the convulsions, and therefore lend some support to the vascular theory of the origin of epileptic fits.

BLOOD CONCENTRATION IN PNEUMONIA

INCREASED concentration of the blood complicates many serious illnesses. It may be caused by excess of loss over intake of fluid, and this is often overlooked when the temperature is raised and the insensible loss from the skin and in the breath is greatly augmented Or it may be due to escape of fluid from the circulation because of altered capillary permeability. The results are a fall in blood-volume and a rise in the red-cell count and in the viscosity and specific gravity of the blood. Under these circumstances the circulation is at a great disadvantage in performing its ordinary functions just when the patient is ill for other reasons It is clear, therefore, that some watch should be kept on the blood concentration in cases of severe illness, and the simpler the method the more reliable will be the results. The blood changes most easily determined at the bedside are the hæmoglobin concentration, as an index of changes in the red-cell count, and the specific gravity. Using this latter method, Dr. J. J. Elphinstone and Dr. E M. Ward have investigated 54 consecutive cases of lobar pneumonia, and they set out their highly significant results in this issue. They find that the mortality varies with the specific gravity; that the upper normal limit of 1 059 is seldom exceeded in mild cases, whereas patients with figures above 1 062 show a high mortality. It has not yet been ascertained whether the blood concentration in these cases is due to lowered fluid balance or to loss from damaged capillaries But pending further information this work gives added point to ensuring an adequate fluid intake in pneumonia.

ARITHMETIC GUIDED BY LOGIC

THE great merit of Dr. Bradford Hill's book, of which the second edition is reviewed on another page, is its plea for a statistical sense rather than elaborate statistical methods Some medical problems have no immediate relation to statistics—that is, to variable numbers—but others have Ordinary medical practice would gain greatly if its practitioners were trained to weigh better the evidence on which they have to act In general they are trained to appr ciate clinical data only as they apply to individual while the correct assessment of many methods diagnosis, prevention or treatment involves con parisons between groups. The first lesson to b learned is a healthy distrust of crude figures A pa ticular treatment has reduced the case-fatality pneumonia by a third; Mr X has had recurre headaches for the last six months Neither statemen means much without further investigation Of th two the latter is the more significant, since Mr X' headaches probably mean something, while th observation about the pneumonia death-rate ma not mean anything at all Yet the medical prac titioner, while he will certainly examine Mr. X, i quite likely to take the pneumonia figures on trust He will be less likely to do so after he has read D Hill's book; and that is a very good reason fo reading it.

OPHTHALMOLOGISTS IN AUSTRALIA

IN Melbourne on April 19 Sir Frederick Mann lieutenant-governor of Victoria, opened the fir annual meeting of the Ophthalmological Society o Australasia (B M A) The illness of the president Sir James Barrett, unfortunately prevented hi attendance, but Dr. James Flynn, the vice-president read his address on blindness and the history o Braille type and took the chair. Among the repre sentatives of kindred societies from overseas b welcomed Miss Ida Mann, who brought greetings from the Ophthalmological Society of the United Kingdom and from the ophthalmic section of th British Medical Association. Mr. Bruce Hamilton (Hobart) represented the ophthalmic section of th Royal Society of Medicine and Dr. R. G Wadd (Sydney) the Egyptian Ophthalmological Society Messages were also read from the United States (whose representative, Dr Aaron Green, was delayed by the lateness of his ship) and from Japan.

The scientific proceedings opened with a lecture by Miss Mann on developmental abnormalities of th eye and their embryology. This was followed by a paper by Mr Hamilton on birth injuries of the ey showing that the obstetrician ought to know mo than he does about the after-effects of ocular trauma. Dr. E. R Trethewie then gave an account of th influence of acetylcholine on ocular tissues Next day Miss Mann read a further paper on ocular abnormalities, followed by Dr J H Niall on persistent and progressive exophthalmos This led to a discussion on orbital tumours in which Dr Barham Black, Dr Duncan, and Dr G A Brew took part Dr A L Tostevin contributed a communication on recurrent bullous keratitis The afternoon was devoted to histology and comparative anatomy, Dr Rupert Willis and Dr Kevin O'Day showing some beautiful preparations, Dr O'Day's being especially interesting to visitors because they comprised many rare specimens of monotreme eyes never seen in the northern hemisphere A visit was paid to the school and workshops of the Royal Victoria Institute for the Blind, and on the following day, after case reports and cinematograph films, a remarkable series of demonstrations of operations was given by Dr Aaron Green at the Royal Melbourne Hospital

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[1] Opper, L., *Arch Neurol Psychiat*, *Chicago*, March, 1939, p. 459.

The society held a dinner at which Miss Ida Mann was elected the first honorary member and also a member of the Australian Committee for the Prevention of Blindness It was suggested that the society should entertain an overseas guest at each of its congresses, and thus link itself with ophthalmologists in other parts of the Empire, to promote interchange of visits and ideas

PSYCHOSOMATIC MEDICINE

"The medical profession has awakened to the necessity of studying what is commonly referred to as 'the art of medicine'" With these words the editorial board of *Psychosomatic Medicine* justify the launching of their new journal[1] To study the art, they say, means trying to understand "the psychic component in the disease process, and in the emotional relationship between physician and patient," and their journal is to be "devoted not to the isolated problems of the diseased mind or the diseased body, but to the inter relationships between emotional life and bodily processes both normal and pathological" "It takes for granted that psychic and somatic phenomena take place in the same biological system and are probably two aspects of the same process, that psychological phenomena should be studied in their psychological causality with intrinsically psychological methods and physiological phenomena in their physical causality with the methods of physics and chemistry" In the interests of unity and of further progress it will endeavour to correlate what is being done in the special fields

In an introductory article, entitled psychological aspects of medicine, Franz Alexander displays his capacity for discussing abstruse matters in simple terms R R Grinker and W R Ingram follow with a paper on clinical and experimental work on the hypothalamus (embodying 480 references) which, like Alexander's, is a striking example of the contributions that modern neurophysiology has made to clinical problems The bulk of this first issue of the journal however is formed by a symposium of eight articles on hypertension The first of these deals with cardiovascular manifestations of an experimental neurosis in sheep, produced by the technique of "conflict" observed by Pavlov to produce "neurotic" disturbance of behaviour in the dog Perhaps the most striking thing about this report is its emphasis that success in producing them under controlled conditions brings neuroses within reach of the great technical resources of experimental pathology In the two subsequent papers L N Katz and Louis Leiter, cardiovascular internists, discuss the physiological and clinical background of present conceptions of essential hypertension, and Edward Weiss, also a general physician, reviews recent advances in the genesis and treatment of raised blood pressure The other communications record psychological studies in hypertensive patients who have undergone intensive deep psychological investigation, and the findings are summed up by Alexander in a paper on emotional factors in essential hypertension

The new quarterly is sponsored by the American National Research Council, and, as its expensive format and low price perhaps suggest, it is a coöperative effort, run without salaries or profits, and intended to further the progress of the concepts implied in the term "psychosomatic medicine" Unlike some publications with a mission, it manages to restrain any urge its editors may possess to express enthusiastic opinions and confines itself almost exclusively to data derived from experimental and clinical studies of a special type The impressive list of American editors and contributors is noteworthy for the predominance of internists Dr Flanders Dunbar, managing editor, has herself an outstanding position in the field covered by the journal In its insistence on simplicity of concepts, nomenclature and language, and by its interest in general medicine, this journal should make known to many the extent to which medicine is capable of changing its generally mechanistic, or vaguely dualistic, attitude towards diseased people It should have a welcome equally from clinicians, medical psychologists and physiologists

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The next session of the General Medical Council will open on Tuesday, May 23, at 2 P M, when Sir Norman Walker, the president, will deliver an address

We regret to announce the death on May 7 of Dr L W TWINING, honorary radiologist to the Manchester Royal Infirmary

On May 18, 23, and 25 at 5 P M, Prof JOHN RYLE will deliver the Croonian lectures to the Royal College of Physicians of London, the subject being visceral neuroses Members of the medical profession are invited to attend

Dr LEONARD CONTI has been appointed head of the medical profession in Germany in succession to the late Dr Gerhard Wagner In addition to the title of Reichsärzteführer Dr Conti will bear the title of Reichsgesundheitsführer

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"   If there is one thing on this earth that man can not 'invent,' it is a true chemical compound because every true chemical compound, as such is nothing more or less than an ensemble of unpatentable properties of matter, created and quantitatively embodied in tangible substance solely by nature You can put together mutually reactive substances and that 'putting together' may well constitute a patentable process, but what you get in and out of the interactions of the juxtaposed substances depends wholly upon the volition of nature Nature, and nature alone fixes the structure the composition and the inherent properties of every true chemical compound that is producible by processes devised by man, and neither you or I nor any one else can alter any one of them Obviously then no true chemical compound, as such can be an 'invention'"—CHARLES L REESE, *Science*, April 28, 1939, p 388

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[1] *Psychosomatic Medicine* Experimental and Clinical Studies. No 1 January 1939 Published quarterly by the division of anthropology and psychology National Research Council Washington D C U S A $3 a year Monograph supplements in preparation $1 50 a year

SPECIAL ARTICLES

RECENT WORK ON THE TRIGEMINAL NERVE

Two papers appeared in March dealing with the trigeminal nerve, one with the surgical treatment of trigeminal neuralgia [1] and the other [2] with the finer anatomy and physiology of the trigeminal nuclei and their central connexions. There has since been a communication in your columns on the surgical anatomy of the subtentorial angle with special reference to the acoustic and trigeminal nerves.[3] Sjöqvist's article was the opening paper read at the Scandinavian Neurological Congress at Stockholm (Aug 29–30, 1938) during a discussion on the neuralgias. It now appears in English in the issue of the *Acta Chirurgica Scandinavica* which is published as a festschrift dedicated to Prof Harvey Cushing. It will be recalled that Prof Olivecrona, the well-known neurosurgeon of Stockholm, was one of Cushing's most brilliant pupils

Recent physiological work by Adrian and others has shown that the nerve-fibres which conduct painful and thermal stimuli are minute in size compared with those for tactile and proprioceptive stimuli The minute fibres are most numerous in the first and third divisions of the trigeminal nerve, but in the sensory root between the gasserian ganglion and the pons these fibres are not gathered in any special bundle. As soon as the root enters the pons the minute pain fibres pass almost exclusively into the bulbospinal trigeminal tract, those belonging to the ophthalmic division passing most caudally while those of the third or mandibular division end in the highest portion of the bulbospinal nucleus The impulses reaching this nucleus are relayed after decussation into the trigeminal fillet which probably enters into close association with the mesial fillet on its way to the thalamus The larger fibres of the fifth sensory root (tactile, &c) end in the principal sensory nucleus in the pons, and their impulses must also be relayed after decussation into a part of the ascending trigeminal fillet.

Sjöqvist repeats the old statement, which has been thoroughly disproved, that the facial nerve carries pressure sensation from the face, and that deep pressure pain is preserved after section of the trigeminal sensory root Though admitting the evidence of autonomic nerve stimulation during the pain crises of trigeminal tic (lacrimation, salivation, flushing), he is doubtful if sympathectomy is ever a cure in cases of atypical facial neuralgias.

THE ÆTIOLOGY OF FACIAL NEURALGIAS

A rough classification of facial neuralgias divides major paroxysmal trigeminal neuralgia into (1) genuine (ætiology unknown) and (2) symptomatic, following affections of the teeth and jaws, sinusitis, aneurysms, tumours and vascular malformations of the cerebello-pontine angle, and disseminated sclerosis It seems not only unnecessary but unscientific to assume that there is a particular form of trigeminal tic with an unknown ætiology, differing from the very numerous instances of persistent trigeminal tic which may follow severe dental operations, dental sepsis, sinus infection, disseminated sclerosis, and the irritation of tumours in the cerebello pontine angle. These cases often differ in no respect whatever from the so-called genuine or idiopathic paroxysmal trigeminal neuralgia, either in their type of pain, trigger zones, or results from treatment by alcohol injection or root section Because these cases are not cured by operation on the teeth, sinuses, or jaws Sjöqvist dismisses the possibility of the neuralgia being of peripheral origin. I have been able to demonstrate that the maxilla, in even edentulous cases of typical trigeminal tic, is crowded with streptococci, and the view that a septic terminal neuritis in the nerve filaments in the jaws is the primary cause will explain the fact that this type of neuralgia practically invariably commences in the maxillary or mandibular divisions. Such a condition may be latent for years until some exciting cause such as a blow, chill, or intense emotion may precipitate the first attack of neuralgia. In disseminated sclerosis it is easy to understand how the presence of sclerotic patches in the neighbourhood of the spinal trigeminal tract may heighten the degree of irritability of these nerve-fibres, already damaged by septic infection of the jaws at the periphery. Moreover, it is thus easy to understand why bilateral trigeminal tic is far commoner in proportion in cases of disseminated sclerosis, 17 per cent as compared with 4 to 5 per cent of other cases of bilateral tic Heredity is not referred to in these papers, though it is not very uncommon, and in one remarkable family, known to me, eleven instances of trigeminal tic occurred in three generations

Sjoqvist devotes nearly a page to the view put forward by Frazier and others that some lesion of the thalamus underlies the clinical picture of paroxysmal trigeminal tic, and his only comment is that these investigations need further confirmation. The anatomical distribution of the pain according to peripheral nerves should be enough to negative such a view, without the fact that destruction of the gasserian ganglion or sensory rhizotomy cures the pain permanently.

VARIOUS METHODS OF SURGICAL TREATMENT

In dealing with the surgical treatment of trigeminal tic Sjöqvist emphasises the comparative safety of the Frazier-Spiller method, of section of the sensory root behind the gasserian ganglion, taking care to spare the motor root Dandy's method of root section close to the pons is generally considered a more serious and dangerous operation, and partial section of the outer half of the root at this spot has been claimed by Dandy to abolish the pain with little or no tactile anæsthesia Anatomical studies of the distribution of the minute pain fibres in the root do not support Dandy's claim Alcohol injection of the ganglion requires considerable experience and delicate technique, but so also does the open surgical operation. The statement that alcohol injection has been largely abandoned in favour of root sections when permanent relief of the neuralgia is intended certainly does not apply in this country. Sjöqvist quotes Horrax as advocating a preliminary peripheral alcohol injection previous to root section, partly as a diagnostic test and partly to acquaint the patient with the necessary feeling of numbness of the face. He is inclined to share Horrax's view.

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1. Sjöqvist, Olof, *Acta chir. scand* Fasc. II and III, March 19, 1939, p 201.
2. Smyth, G E, *Brain*, March, 1939, p 41.
3. Stibbe, E P, *Lancet*, April 15 and 22, 1939, pp 859 and 918

Kirschner's method of diathermy coagulation of the gasserian ganglion is condemned as risky and uncertain in its results Sjöqvist's special method of intrabulbar trigeminal tractotomy is referred to, its special danger being recurrent laryngeal paralysis from damage to the vagus rootlets The particular value of this operation is the arrest of the neuralgia without the production of tactile anæsthesia, a very valuable gain, as the patients do not complain of numbness of the face, and therefore eating is not interfered with on the affected side So far some thirty cases appear to have been operated on by this method, at least half a dozen in this country The future of this operation will be watched with great interest when the results of a large number of cases have been analysed Section of this trigeminal tract does not appear so far to arrest post herpetic trigeminal neuralgia Sjöqvist further claims that such herpes must be nuclear in origin, as he has seen it occur on the anæsthetic area after an incision for tractotomy in a patient whose sensory root had been cut This anæsthetic area he speaks of as being denervated, but this could not be the case as the nerve fibres peripheral to the uninjured gasserian ganglion would be perfectly normal, and it is more likely that the ganglion may have been slightly interfered with during the tractotomy operation, as herpes on the anæsthetic face is a not uncommon sequel of alcohol injection of the ganglion Section of the ascending quintothalamic tract has been performed in two patients, only one surviving, with resultant complete analgesia of one half of the face and the adjacent cervical segments Sjöqvist throws out the suggestion that such an operation may in the future become standardised, and that it would correspond precisely to the already useful operation of spinal chordotomy By this means it might be possible to arrest the pain in those hitherto incurable cases of chronic atypical facial neuralgia not amenable to alcohol injection or root resection, and yet not psychalgic in origin The evidence, however, of a separate ascending quinto thalamic tract after decussation is very doubtful, and in all probability these fibres run at first in the mesial lemniscus and later with the spinothalamic tract The logical analogue to spinal chordotomy would therefore be a localised section of the spino thalamic tract in the upper half of the pons, an operation which savours at present somewhat of Utopia

THE TRIGEMINAL NUCLEI AND THEIR CENTRAL CONNEXIONS

G E Smyth in a careful and excellent review of the experimental, anatomical and clinical work done on the trigeminal nuclei and their central connexions refers to the fact, first shown experimentally in 1892 by Bregmann, that the ophthalmic pain and temperature fibres lie most ventral and the mandibular fibres most dorsal in the spinal trigeminal tract in the medulla The evidence he produces from the literature and from three clinical cases, two with autopsy, carefully worked out in the National Hospital laboratory, confirm beyond all reasonable doubt the facts that the ophthalmic pain and temperature fibres end lowest in the spinal nucleus, and the mandibular fibres highest at the mid medullary level This is described as being in inverse order of the peripheral distribution of the nerves Rather do the facts indicate that the trigeminal divisions should be renumbered, the mandibular or third division being renamed the first, and the ophthalmic as the third division If this alteration could be agreed to by anatomists, then the segmental order would be unbroken from the chin and lower lip as the first division, or the most anterior in nerve supply, upwards to the maxillary or second division and to the ophthalmic or third division and down the back of the head to the 1st and 2nd cervical areas and so to the neck for the 3rd or 4th cervical The concentric segmental zones of analgesia described by Von Sölder and Schlesinger in syringobulbia do not necessarily indicate a steadily ascending lesion of the medulla, as in this disease the cavitation and the surrounding areas of gliosis are too irregular and indeterminate

In the operation for trigeminal tractotomy by Sjöqvist's method, in order to obtain total mandibular analgesia, the incision must be made as high as the mid bulbar level, whereas if the tract is cut at the level of the lowest vagus rootlet, complete ophthalmic and maxillary anæsthesia will be produced, with loss of pressure pain on forehead and cheek and of the corneal reflex Thermanæsthesia also will be complete over the ophthalmic area, though partial only over the second division Tactile loss will be completely unimpaired, an interesting confirmation of the fact shown long ago that the cornea is innervated with pain fibres only

The evidence regarding the upward path to the thalamus of sensory impulses relayed from the spinal and pontine trigeminal nuclei is more conflicting Wallenberg's and Van Gehuchten's experimental work on rabbits between 1896 and 1901 appeared to demonstrate a quintothalamic ascending tract in the dorsal portion of the formatio reticularis, ending in the ventral nucleus of the thalamus These results are not confirmed by the pathological findings in the two cases recently worked out at the National Hospital, one of syringobulbia and the other a localised area of medullary necrosis due to posterior inferior cerebellar thrombosis, death occurring 16 days after the thrombotic lesion This second case is especially valuable, as, owing to the recent lesion, it was possible to follow the degenerations by the delicate Marchi method This showed degeneration of the internal arcuate fibres starting from the spinal nucleus and decussating in the raphé to run upwards in the medial half of the mesial fillet quite apart from the spinothalamic tract No degenerated tract was *found in the formatio reticularis to suggest* a dorsal quintothalamic tract The quintothalamic tract running in the medial lemniscus probably later on above the mid pons level approaches closely the spinothalamic tract

Protest must be made against the continual use of the hybrid "cephalad" which occurs no less than 60 times in the paper Partly Greek, partly Latin, and wholly horrible, this word is found 12 times on page 76, where also may be read the following disjointed cacophony ending line 15, "caudal and cephalad to the cephalad" What is wrong with the English words upwards, upper, and above, which would make smoother and more pleasant reading, and which none but a pedant could pretend to misunderstand in their exactness of application ?

Dr Smyth's article is otherwise an excellent and most painstaking résumé of the subject, and the two carefully worked out autopsies are a valuable contribution *to the anatomy and physiology of the* trigeminal nuclei and tracts

SURGERY OF THE SENSORY ROOT

Stibbe quotes clinical evidence from tumours in the cerebello pontine angle supporting Dandy's view that the pain fibres are collected in the posterior portion of the trigeminal nerve, and that they are arranged in the order postulated by Stopford, the ophthalmic most posterior, next the maxillary, and the mandibular most anterior, agreeing with the known order of the fibres in the trigeminal tract and spinal nucleus. In his experimental operations on macaque monkeys, after division of the outer third of the trigeminal nerve immediately proximal to the gasserian ganglion, Stibbe found no corneal anæsthesia, and subsequently little or no degeneration in the spinal or mesencephalic roots. The latter he explains by the large number of bipolar nerve-cells to be found embedded in the sensory root of the trigeminal nerve, especially near the pons, a fact previously demonstrated by Peters, and he suggests that these cells may be trophic for peripheral sensory fibres, and that they may be the source of regenerated fibres after a sensory root division close to the ganglion, and may therefore account for recurrence of trigeminal neuralgia in rare cases

In two experimental cases of division of the posterior half of the sensory root close to the pons by Dandy's method he subsequently found conspicuous Marchi degeneration of the spinal root in the medulla, and he is of opinion that the whole of the pain fibres in the trigeminal tract were included. He is therefore a supporter of Dandy's contention that a proximal partial resection of the root destroys the pain fibres running to the spinal nucleus He does not, however, mention the condition of the corneal reflex, which should have been lost if all the ophthalmic fibres were divided.

WILFRED HARRIS.

MEDICINE AND THE LAW

Doctor and Speed Limits

A MAIDSTONE doctor, charged with exceeding the speed limit, admitted that he was travelling at 40 miles per hour in a built-up area, but explained that he was called urgently to a patient suffering from cardiac asthma In such cases, he said, life could be saved by an injection, but it was often a matter of minutes The defending solicitor contended that, if a doctor, in order to save a woman's life, was justified in conducting an operation which would otherwise have constituted the serious crime of abortion, he must certainly be justified in committing the minor offence of exceeding the speed limit when a patient's life was at stake

This decision of a particular bench of justices upon a particular set of facts must certainly not be regarded as a ruling that any surgeon or physician can ignore the Road Traffic Acts in a case of urgency. Another bench, when a doctor next relies on this defence, is just as likely to remind the defendant that, in hurrying to save one life, he may be endangering other lives There is nothing in the Road Traffic Acts which puts the medical profession in a privileged position. The 1930 act was amended by departmental regulations so as to exempt from maximum speed limits any vehicles which were being used for fire brigade, ambulance or police purposes In 1934 this exemption was properly incorporated in a statute instead of being enacted by the Ministry of Transport In January last year the Wells city magistrates held that a private motor-car which conveyed from Glastonbury to Wells a patient with a fractured ankle was being used for ambulance purposes and was therefore exempt from the statutory restrictions on speed. A police car ordered the motorist to stop: he replied "I can't stop now; I have an injured man in the car." He was prosecuted and the case was dismissed. The statute does not say that the vehicle must be a real ambulance, constructed as such. The vehicle is exempt from the provisions imposing speed limits "on an occasion when it is being used for . . ambulance . . purposes, if the observance of those provisions would be likely to hinder the use of the vehicle for the purpose for which it is being used on that occasion." Those words, if a little cumbrous, are clear enough. In the Wells case the justices were obviously justified in exonerating the motorist In the Maidstone case they would have been justified in saying that, if Parliament intended to exempt members of the medical profession when attending urgent calls, Parliament should have said so. On the other hand, if the Maidstone justices had decided to convict, they might have found it a proper occasion for leniency. If the driver is reasonably expert and the traffic conditions are reasonably favourable, a speed of 40 miles an hour may be deemed *malum quia prohibitum* rather than *malum in se*.

Heart Disease and Workmen's Compensation

Last month the Court of Appeal reviewed the claim of a widow under the Workmen's Compensation Act in a case where her husband, suffering from disease of the heart, became seriously ill at his work and died soon afterwards. The county-court judge did not find as a fact either that the death was due to the progress of the disease or that it was accelerated by his work. He dismissed the widow's claim on the ground that she had not established that the workman had suffered personal injury from an accident arising out of and in the course of his employment. There had been considerable discussion at the trial on the question whether a specific injury had arisen from a specific act on a specific date The widow's case was that the rupture of the aortic cusp occurred on the day of the man's death; the county court judge found that it occurred three weeks earlier The Court of Appeal thought that a physiological injury or change occurring in the course of a man's employment by reason of the work in which he was engaged at or about that moment was an injury by accident arising out of his employment. This was so even though the injury or change were caused partly, or even mainly, by the progress or development of an existing disease, provided that the work he was doing at or about the moment of the occurrence of the physiological change or injury contributed in any material degree to its occurrence It was not necessary to prove any strain or similar cause other than the strain arising out of the workman's ordinary work. The Court of Appeal sent the case back to the county court for a fresh hearing The judge's reason for refusing the award might be that the man's collapse was solely due to the progress of the disease and that he would have died on that day whether he went to work or not. But the judge had not made any finding of fact to this effect.

There are several important cases on heart disease in relation to workmen's compensation—from Clover, Clayton and Co *v.* Hughes in 1910 to Partridge Jones and Paton *v.* James in 1933. It is unnecessary for the court to find sudden strain The question is whether the workman died from the disease alone or did the work help in a material degree?

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

SIR DAVID WILKIE'S BEQUESTS

It is now well known that the anonymous donor who made possible the extension to the surgical research *department in Edinburgh some years ago* was Sir David Wilkie, and it has been decided that the department shall in future be known as the Wilkie Surgical Research Laboratory Under the terms of Sir David's will a further sum of £10,000 has been left to the court of Edinburgh University for the endowment of scholarships for workers in the research laboratory A further share of his estate has been left to the court for the establishment of research scholarships in surgery and/or medicine, particularly for the benefit of graduates from the British Dominions, the research being, as far as possible, conducted in conjunction with the department of physiology The amount of this residue is not yet known, but will probably be about £30,000 These bequests will form a valuable addition to the research grants in Edinburgh and provide a suitable memorial to one who was always keenly interested in medical research

GASTROSCOPY

In a paper read before the Medico Chirurgical Society of Edinburgh on May 3 Dr D M I Batty pointed out the progress made since gastroscopy was first introduced, but mentioned that further advance was necessary towards the elaboration of an instrument which would be capable of making all areas of the stomach visible and would combine maximum efficiency with a minimum of discomfort to the patient He gave a general review of the procedure and of the findings in the normal and the abnormal stomach, referring to the severity of the gastritis which may follow operations on the stomach and also to the frequency with which gastritic changes, especially of the hypertrophic type, are encountered in patients with gastric symptoms He next discussed the relationship of gastroscopy to other methods of investigation of the stomach and compared its usefulness with that of radiology The profile views obtained radiologically could not equal in value the appearances obtained by the gastroscopist on direct inspection of the gastric mucous membrane Radiology, however, provided an accurate impression of the size, shape, motility and position of the stomach in the abdomen, and allowed of the recognition of gross defects such as ulcer or carcinoma Gastroscopy proved superior in the detection of the finer changes seen in gastritis and in the terminal stages of healing of peptic ulcer, and the method provided a possible means for the early recognition of carcinoma Furthermore, gastroscopy may be employed to confirm or disprove the radiological findings should the clinical manifestations suggest a different diagnosis Dr Batty concluded that gastroscopy constituted a major advance towards the accurate diagnosis of gastric disease, but that it should be used in full collaboration with the clinician and the radiologist

COÖRDINATION OF HOSPITAL SERVICES

At a recent meeting of the Edinburgh public health committee Dr W G Clark, the medical officer of health, said that if the Royal Infirmary were reconstructed it would probably be made a much smaller hospital for the reception of acute cases only, and that other cases would be "fed out" to country institutions The infirmary would remain an important link in any future hospital policy in view of its assets, such as its X ray department He gave a welcome indication of efforts being made to coördinate the voluntary and municipal hospitals in Edinburgh The infirmary is anxious to have more facilities for transferring chronic cases to the municipal hospitals, but the latter have great difficulty in obtaining sufficient nurses A scheme may therefore be evolved whereby the infirmary nurses do a short period of "chronic nursing" at the municipal hospitals, and so help to relieve the difficulty Special arrangements are also being considered whereby the corporation can receive some payment for the treatment of infirmary patients Dr Clark said that these schemes are only at the stage of preliminary discussion, but coöperation between the hospital authorities is so important that he hoped that the obvious difficulties would be adjusted and that real coördination would be attained

STANDARD FOR CHORIONIC GONADOTROPHIN

At the third International Conference on the Standardisation of Hormones, held at Geneva last August, it was decided that international standards should be established for certain hormones of the anterior lobe of the pituitary gland and analogous substances found in urine and serum, and that international units should be defined in terms of a weight of each such standard The final preparation of these standards, their dispensing in convenient form, and their storage, preservation, and distribution were left to the National Institute for Medical Research

The preparation of the international standard for the gonadotropic (now called gonadotrophic) substance of human urine of pregnancy (chorionic gonadotrophin) is now complete The standard has been prepared from substantial amounts of material provided by six firms in different countries The individual samples having been approved by the conference, a mixture was made and the standard has been finally dispensed in tablets weighing about 10 mg The international unit is defined as the specific gonadotrophic activity of 0 1 mg of the standard preparation, which is roughly the amount required to cause cornification of the vaginal epithelium of the immature rat Each tablet thus contains approximately 100 international units

Like the international standards for a number of other hormones, drugs, and vitamins, the standard for the gonadotrophic substance of human urine of pregnancy (chorionic gonadotrophin) is held, on behalf of the Health Organisation of the League of Nations, at the National Institute for Medical Research, and is distributed therefrom to national control centres established in other countries, or to workers in countries where such centres have not yet been set up Applications from the United Kingdom should be made to the Department of Biological Standards, National Institute for Medical Research, London, N W 3

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE —The council of this society has awarded the Chalmers Gold Medal for 1939 to Dr Max Theiler of the international health division of the Rockefeller Foundation, New York in recognition of his work on yellow fever and the possibility of producing the vaccine by the use of attenuated virus The medal will be presented at the annual general meeting of the society at Manson House, 26, Portland Place, London, W 1, on June 15

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN AMATEUR JOURNALIST

II

ONE of my colleagues assures me that he can identify the occupation of a man as he enters his outpatient department. Well, so can I, so can anyone up to a point, for some men carry with them in their physiognomy, gait, clothes, mannerisms, a sufficiency of superficial evidence. But my colleague goes further—he gives instances of occupations which must be devoid of any characteristic or peculiarity and he talks of "intuition." I doubt it. In all probability his natural capacity for minute observation and deduction is of superior quality; he brings to bear a wealth of unconscious automatic reasoning, rapidly summated at a mere glance I suspect that a good deal of what the professional palmiste does is on similar general principles, and that while distracting the attention by appropriate manipulations and patter, pretending to restrict herself to the lines on the hand, she is all the time observing details which will denote occupation, mannerisms, habits and, by implication, possibilities and potentialities. With all of these a lucky guess may then smack of the miraculous, a faux pas is rapidly glossed over and the credulous are impressed, since only the hits are remembered and all the misses forgotten.

We are in our way specialised detectives. Pathological types and conditions strike us at once because they are the things in which we are particularly interested. Perhaps for this reason we are apt to be distracted from the more mundane fields which the orthodox detective is obliged to cultivate, and would be ranked low in the scale of general observation. And yet with our training we might perhaps, if we really tried, display a general analytical capacity well above the average. Dr Bell of Edinburgh, Conan Doyle's prototype of Sherlock Holmes, was famous for his lightning deductions in the manner of his great fictional representative. We could, I expect, explain why it is that some occupations stamp themselves upon the features and bearing so unmistakably that almost anybody can recognise them, while others baffle the most experienced and observant. Or do they?

Take the jockey, take the whole class of "horsey" men; they might be made from a mould (I omit of course the familiar "horsey" associations of dress, jewellery and so on) Here the constant contemplation and society of the horse leads to the features and expression. And so it is when there is intimate association with other animals. The army man is easily recognised and not only on account of his erect bearing Is there something in the fixed expression imposed by discipline? But why should the naval man be distinctive? Is there some influence of the sea or the breezes or the life or the way of thinking? We recognise the effect of thought in moulding the features, for we have as examples the ascetic divine and the man of law A tempting explanation is to reverse cause and effect and assume that the cast of features pre-existed and was a mirror of the type of brain likely to ensure success in that particular profession. This might do for selected cases but there is surely too much evidence which supports the idea of occupational influence to justify an alternative explanation.

What shall we say of our own profession? Is there anything at all which suggests a medical face? Think of all your colleagues, including every category; the general practitioner, the surgeon, the consulting physician, the radiologist, the anæsthetist, and all the specialists. Would you, if entirely ignorant of the identity of the man, select first the profession and then the specialty? Sometimes, perhaps, but how often? How interesting it is to meet in the flesh a famous member of the profession whom one has visualised from his reputation or from his literary contributions. And how frequently one is amazed at the contrast between the creature of one's imagination and the actual being. An oculist may turn out to be a very large and heavy-looking being with hands like hams, the last man one would have expected to wield the cataract-knife and execute movements of such exquisite delicacy. A surgeon with an international reputation for spectacular operations of the greatest magnitude is revealed as a little fellow with soft brown eyes and the mild retiring appearance of one who would be terrified at the smallest responsibility. Over there is a magnificent dashing-looking man with waxed moustache whom one could easily picture at the head of a cavalry charge: he is a radiologist. A foppish, drawling youngster with a bored expression, who looks as if his chief interest was his figure and his chief care the correct shade of his neck-tie, turns out to be an indefatigable research worker in biochemistry. Here and there are surely prosperous retired brewers and butchers, there is one who looks like a policeman in plain clothes, another like a country parson, another an actor—juvenile lead for choice—and many like nothing on earth. All, however, are eminent surgeons, physicians, specialists whose success denotes that if they have mistaken their vocation, they have at least made a very lucky mistake.

Can there be nothing at all in our education, training or thoughts, no one uniform feature which should impose a characteristic mark? But then, perhaps, we should inquire, what is there to expect? What is the doctor's face? It was different no doubt in the past when the familiar dress, the invariable whiskers and the somewhat lofty pontifical attitude must have helped. We know the original of Fildes's picture—which I think is far from deserving the modern sneer—was a real person. And certainly his is the face of a kind man whom anybody would be glad to see when sick, even if at the present day we *do not* happen to know anybody who looks like "The Doctor" and are well acquainted with several dear colleagues who do not resemble him in the slightest but whom we would welcome at our bedside.

* * *

The frock-coat was at one time our distinctive dress, almost our uniform, even if it was not restricted to our profession. I myself never had a frock coat: as a student I missed this indispensable adjunct of qualification by, I reckon, three years. Even the incursion of the morning-coat was regarded as a rather daring innovation for professional use save ceremonial occasions, with perhaps an extension of license to very young men (I remember a pusillanimous attempt at compromise: the production of a queer garment which was facetiously described as a misdeal between the two) And now the frock-coat is almost as unusual an article as a pair of elastic-sided boots Even the shopwalker has abandoned it, although the undertaker—absit omen—remains faithful It is a pity, for a well cut frock coat is a handsome garment enhancing the dignity of a very tall or very big man Incidentally it was kinder than its modern representative, the morning coat, in concealing imperfections But the silk hat has been almost killed by the motor car, and without a silk hat the frock coat is, even with all the laxity and indifference of 1939, quite nadmissible Or so I suppose

I well remember seeing a young man in the Haymarket in February, 1900, attired in a frock coat and bowler hat and I give you my word that derisive crowds followed that unhappy sartorial solecism at no respectful distance I doubt if as much interest would be excited today by the appearance in Piccadilly of somebody habited in a dressing gown and a sou'wester So do reactions change with the times And yet it is still considered contemptible to wear a made up evening tie Why ? Rather than incur such a suspicion some men will prefer extraordinary products of their ineptitude, giving resemblance to a village bridegroom or the old time nigger minstrel A few can produce a perfectly symmetrical result , and yet the more skilful the tying the closer is the approximation to the very effect the well dressed man is supposed to avoid.

Will the day of the nut, the masher, the toff, the swell, even the dandy ever return ? Before the war, one eighth of an inch in the length of a coat distinguished the real thing from the parvenu Whether the coat sleeve bore three or four buttons was almost as important a consideration as the choice of a career How silly ! thinks the modern young man who has gone to the other extreme Plus fours can be seen in the stalls of the West End theatres , we know what Rotten Row is like , the footman will not close the door to you if you call on the duchess in a coloured soft collar

Well, perhaps it is all for the best, although it is a pity to have become so indifferent , for I maintain that dress does affect character and reactions The policeman out of uniform is a bulky unimposing spectacle , all his majesty and authority pass with his disrobing The panoply of the Horse Guards serves a very valuable purpose justice seems more certain when administered by scarlet and ermine , and perhaps even the lion tamer s conventional outfit was purposely designed for its intimidating effect For uniform stands for much The ass in a lion's skin if he feels like a lion is for practical purposes a lion If you look the part, you feel the part, you are at your best in the part I cannot comfortably do a ward round or participate in a consultation unless in a tail coat and trousers reasonably decorated with the longitudinal fold in front A confession of weakness this, especially if the public has by now grown accustomed to our more matter-of-fact dress and has ceased to identify formal clothes with professional importance We may pride ourselves that we have evolved and have become superior to the thraldom of uniform Yet still I wonder and hanker and cling a little to the past

* * *

General appearance and dress Now may I say a word about voice ? I pondered this feature a few weeks back when I accorded an interview to a commercial traveller who had been sent to puff the reputed advantages of some patent food , the type of man you not infrequently receive out of a sense of compassion on the live-and-let live principle and who departs sycophantically thanking you for having seen him But the debt was mine, for I sat and listened to him and it did not matter to me one jot whether his particular preparation was all proteins or all vitamins or purin free or all of them at one and the same time , I wished that he would go on talking for hours, for his voice had that peculiar musical quality to which every nerve in a jaded body vibrated sympathetically I doubt if he himself was conscious of his rare possession, although obviously it was just such an accomplishment as might be regarded as the greatest asset for his particular occupation And when he had gone I reflected how rare are the opportunities to listen to a really attractive voice, remarkably so considering the part it plays in human associations and not least in our profession Our emotions are stimulated pleasantly by the soft, sweet, low, gentle, coaxing, silvery voice we resent the hard, cold, raucous, cruel, steely voice, one which cuts like a knife or stings like a whip (I have culled all these descriptions from popular novelists) We know that a shrill voice can be as painful as a solo by a slate pencil , a whining, obsequious voice as unalluring as a performance on the bagpipes , a mumbling, slobbering, indistinct voice as exasperating as a rough-edged collar

But one must make allowances for taste There is scope here, as everywhere and always, for legitimate difference of opinion , there are, I understand, people who really like the saxophone It may even be possible that there are some who prefer the "polate" or "refaned" voice, the bleating corruption familiar in certain circles or the colourless production that is alleged to be "Oxford" (The deliberately affected drawl of certain public schools is traditional and clear enunciation is "bad form" It is interesting to reflect that a voice is rarely if ever too deep to be attractive and that although a clear tone is in general desirable, there is something singularly pleasing about a certain husky quality

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I find it occasionally necessary to warn students that although they must recognise certain articulations as pathological, they must not fall into the trap set by mere peculiarities with which they may not be familiar The speech of an edentulous shepherd from a remote Scottish village may well sound like a queer nervous lesion to a Sassenach ear. During one such occasion of instruction, I was at the bedside of a north-countryman and I observed that "whilst this good man's speech seems a bit strange to us, I daresay our southern pronunciation is queer enough to him " "Aye by Goom ye're reet there " acquiesced the hearty from Yorkshire

Now there is this uneasiness Solicitude for the susceptibilities of others has often made me wonder how far it is possible to estimate the effect of one's voice upon others, having regard to the difference between the channels of sound conduction It's a nasty thought that one may be living in a fool's paradise I shall never forget the dreadful shock when I first heard a gramophone reproduction of my speaking voice I fought hard to persuade myself that instrumental distortion was to blame Yet on the occasions when I have broadcast anonymously, several friends have been quite certain in their recognition of my voice notwithstanding the absence of any expectation to hear it, so there is

(Continued at foot of next page)

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

DURING last week the Camps Bill passed its third reading in an atmosphere of congratulation, and most of the speeches dealt with the civilian school holiday side of the proposals and not the war and evacuation side. But on the evacuation side Mr Walter Elliot announced that in time of war it would be possible largely to increase the normal accommodation built for educational purposes

The bill was introduced for third reading by Mr Kenneth Lindsay *in a speech extolling not only* the advantages of camps from the health and education point of view but also their delights. Almost it seemed, as one or two speakers mentioned, that Mr. Lindsay was leading children out on to grassy meadows to the piping of a shepherd's flute and forgetting all about war's alarms. It was a pleasant interlude of civilisation in a week devoted for the most part to detailed consideration of duties imposed by the budget, and to the first day's debate on the second reading of the Military Training Bill, usually called the Conscription Bill.

It is a curious reflection on the methods of English legislative procedure that it has required the threat of a major catastrophe in Europe to bring to fruition the idea of camps for elementary school-children which has such a great weight of expert medical opinion behind it. The camps are now being erected because they will serve as additional premises available for evacuation in time of war and not primarily because they will be of great benefit to the health and so to the education of a large proportion of the elementary school-child populations This was described during the debate as introducing a valuable reform "by a side wind," but a "side wind" is an unduly mild description of the European war storm now threatening In war-time the camps may prove to have a special value in outbreaks of infectious disease, or where the need arises for the isolation of any special group of children for some other reason Another "side wind" effect of defence preparations is the extension of piped water-supplies into many rural areas where they did not previously exist This has not been done for the obvious health reasons but in order to provide water for the local fire brigades now being set up in accordance with recent legislation to deal with fires started by incendiary bombs or other explosions. It only remains to discover a war use for radium to get all the hospitals supplied with as much as they want.

* * *

The Military Training Bill will mean the medical examination of about 300,000 young men this year and of a corresponding, probably larger, number in the next two years It should provide material for an interesting comparison with the results of medical examinations in 1914–18 The interest is enhanced by the fact that the age-group to be examined is *of immediately post-war conception* With regard to medical and dental students the bill raises problems *as to the best time for training.* For medical students it seems rational to postpone training until the students have passed their intermediate examinations and are at the clinical stage To train medical students to bear arms as fighting soldiers would no doubt be attractive to many of them; as it was in the late war But to use partly trained doctors in that way at a time when all indications point to the need for a great increase in the number of doctors to provide for A R P. and the like is a waste of trained or partly trained men It is clear that any army training for *medical students must not come too near their final* examination, and should be on R A M.C. lines. Considerations of the same kind also apply to dental students and on both these subjects there will be discussion in the House

Another effect of the Military Training Bill is to make wives of conscripts eligible for allowances, and by a more closely connected "side wind" this has involved the lowering of the age of marriage in the regular and territorial forces from 26 as it now is to 21. Will this result in an increase in marriages *and an increased birth-rate ?*

* * *

The effects of the war situation in Europe are *forcing many changes on our* social structure and social institutions The present budget with its *astronomical figures of military expenditure*—rising towards 2 million pounds a day—is being met by loans plus certain increases of taxation, *notably* $1\frac{1}{2}d$ an ounce on tobacco and $\frac{1}{4}d$. a pound on sugar But that is only for the present and is not much indication of what the future may hold. It is important that medical opinion should be ready to express itself definitely if taxation, let us say in next year's budget, adds seriously to food costs or otherwise affects consumption so as to depress the standards of living. The question of food standards in time of war should also be faced It should at least be possible so far to profit from the experience *of the last war and from the general* extension of knowledge of diet as to prevent any serious deterioration. *And that is going to give medical* M.P.s in the House of Commons quite a lot to think about

FROM THE PRESS GALLERY

Military Training Bill

ON May 4 in the House of Commons Mr. CHAMBERLAIN moved the second reading of this bill. He explained that the gross figure of the numbers of men between the ages of 20 and 21 who would come under the bill would be 310,000. *After* making certain necessary deductions about 200,000 men would probably be *available for compulsory* training this year. The bill was to operate for three years *In the second and third years* the number who would come under the bill would be greater owing to the bulge in the birth-rate at a corresponding period some time ago. If the act ran for its full term it would give the Government about 800,000 men altogether. The bill applied to every male British subject of the requisite age who was not ordinarily residing in one of the dominions or colonies or mandated territories There were a number of

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little hope that the imperfections can all be attributed to artificial modification. Clearly, too, *some people* must be capable of exact interpretation of all sounds as they are heard by others, for on this depends the whole art of mimicry. And although it seems inconceivable that certain speakers can possibly be unaware of the ugliness of their utterances, we have, I suppose, to consider the enormous range of variations which would be counted under a "musical ear" and perpetually to remind ourselves that there is no [illegible] about tastes.

exemptions, including the members of the regular forces and those members of the auxiliary and reserve forces who enlisted before April 27 To them must be added those who were found after medical examination not to come up to the standard of medical fitness required

Dealing with the question of conscientious objectors Mr Chamberlain claimed that this particular class had been dealt with in a broad-minded manner A conscientious objector had first of all to apply to be put on a special register, and then a local tribunal would assign him to his appropriate category He might be finally placed on the register of conscientious objectors without any conditions at all, or he might be conditionally registered, the condition being that he must do some work of national importance as laid down by the tribunal, or he might be registered in the military-training register but be assigned to non combatant duties In the view of the Government where scruples were conscientiously held they should be respected and there should be no persecution of those who held them (Cheers) All they had to do was to see that they were not abused The Government had decided that the bill should not be extended to Northern Ireland They were convinced, however, that the spirit of loyalty in that part of the United Kingdom would result in no smaller proportionate contribution than from the rest of the country The sooner the bill could be got through the sooner they could assure the safety of the country and the greater would be the effect on public opinion in Europe

Mr LEES SMITH, in moving an amendment on behalf of the Labour Party, said he thought they had been unfairly treated over the pledge of the Prime Minister not to introduce conscription, repeated less than a month ago—Sir ARCHIBALD SINCLAIR, for the Liberal Party, made no criticism of the Prime Minister's act in revising his pledge against conscription, but criticised the procedure he had adopted, and in particular his failure to consult beforehand the leaders of the opposition parties and of organised labour who had responded to his appeal to support the Government in their campaign for voluntary service, a response which was made on the basis of that pledge—Sir HUGH O'NEILL voiced the protest of Ulster members against the exclusion of that province from the bill He described this as a surrender of the United Kingdom Government to the dictates of the head of the government of the Irish Free State

Mr PICKTHORN said he had made wide inquiries as to what was being thought in the universities Nobody responsible for any educational institution, or any pupil or student, desired preferential treatment, but under clause I of this bill the Minister, if he was satisfied that there was good cause, might authorise persons registered either to do their service earlier than normally, or to postpone it He hoped that educational arrangements would come within the scope of the words "good cause" He asked that people who were finishing a course this June should know as soon as possible that they would not be called up before they had taken their examinations in the first or second week of June A public statement to that effect would be very helpful If it was intended during the next two or three years to call up university undergraduates in the course of the curriculum he hoped that the calling up would not depend on accident of birthdays Educational arrangements would be knocked endways if one lot were called up in January, another in February, and so on He hoped it would be found possible to call them up at one date in the year preferably in the spring, so that the six months would cover the period of the long vacation

Mr ERNEST BROWN Minister of Labour, said that the announcement of the intention to introduce compulsory military service had not had an adverse effect on the voluntary national-service schemes In both of the last two weeks there had been a record number of applications for voluntary enlistment But on a voluntary basis they could not have obtained the same number of trained men in the same time as they would get by the compulsory system There would be three stages in the working of the bill: (1) registration in the military training register, (2) medical examination, and (3) calling up for training All men would be required to register as far as possible on the same day The bill recognised anticipation and postponement in order to meet hardships That, of course would affect educational careers There would be Military Training (Hardship) Committees and they would deal with cases of anticipation or postponement Individual notices would be served on men who were registered to attend for examination before a medical board There would be about 120 medical boards at convenient centres throughout the country The Government appreciated the great importance of medical examination in order to secure that men were not subjected to training which would be injurious to their health Each medical board would consist of five qualified medical practitioners and it would have authority to direct examination by a consultative examiner in special cases Men who had passed the medical board would receive their individual notices to present themselves at the appropriate reception depôt for military training At least ten days would be allowed from the date of the notice for the men to make arrangements It was proposed to call up the men in approximately equal batches beginning in June The Government understood that it was of importance to a great number of students to know the exact details of the arrangements

On May 8 the bill was read a second time after a Labour amendment had been defeated by 387 votes to 115

Liability of Local Authorities

In the House of Commons on May 3 when the Limitation Bill, which has already passed through the House of Lords was considered on Report, Mr FOOT moved an amendment to extend the period within which an action might be brought against a public authority from one to two years He said that as the law stood the period within which an action might be brought against a defendant in the ordinary way was six years, but where a public authority was the defendant the period was only six months, and in fatal cases twelve months This led to great and undeniable injustice The case of Freeborn versus Leeming showed the sort of thing that happened as a result of the Public Authorities Protection Act —

> The plaintiff being injured in an accident was taken to the workhouse infirmary and placed in the care of the defendant, the medical officer The defendant negligently failed to diagnose the nature of the plaintiff's injury and made no attempt to give him the treatment which if given at the time would effectually have cured him On Oct 15 1923 the plaintiff left the infirmary and from that time ceased to be under the defendant's care He consulted another doctor who discovered that his hip was dislocated As it was then too late to apply the necessary remedy, the plaintiff's injury was permanent On April 25 some six months after he had ceased to be under the defendant's care he brought his action claiming damages for negligence —
>
> Held That the action was barred by section 1 of the Public Authorities Protection Act, not having been brought within six months next after the act, neglect or default complained of

Continuing, Mr Foot said that this bill effected an improvement, because it raised the period from six to twelve months but it was the unanimous verdict of those who were familiar with these matters that the period of twelve months was not enough

Mr SILVERMAN said it was no good saying that no public authority would take advantage of its rights under the act A public authority had no right to do otherwise, for it administered public funds In connexion with the recent outbreak of typhoid fever at Croydon, it was ultimately decided in a friendly action in the High Court that the epidemic was due to faults on the part of the authority and damages were awarded But by the time that had been established the period of six months had been exceeded The Croydon authority wanted to do the right thing and pay appropriate damages, but in order to do so they had to come to Parliament and present a private bill which was now before the House. He knew of a small boy who was treated in a city hospital and was burned through being left too long in the electric blanket with the result that he would have a permanently deformed leg. The child's guardians instead of going to a solicitor left the matter in the hands of a councillor on the assurance that he would take the matter up. The councillor no doubt honestly meant to help, but unfortunately the statutory period of six months slipped away before any settlement was made and the authority were debarred from paying one penny damages to the child Was it right that because of this perfectly arbitrary time limit that child should have to go through life with a permanently deformed leg, unable to earn its living and without a penny of compensation merely because the hospital in which the injury was sustained happened to be owned by the city instead of being a voluntary organisation?

Mr Marshall said that this protection to public authorities had existed for 300 years, and surely it had not been given without some good cause. Local authorities feared that if the period was extended any further than the bill proposed they would be open to a vast amount of unfair litigation. There was a great difference between local authorities and private individuals. The local authorities were compelled to do their work, and they were entitled to special protection.

Sir Donald Somervell, Attorney General, replying for the Government, said that the position before the passing of the act of 1893 was that in public-health matters there was a general legal limitation, applying to all local authorities, of six months. Other activities of local authorities were dealt with by a series of statutes, nearly 100 in number, some public and some private, but in all of them Parliament had put a short period of limitation on all statutory undertakings performing a statutory duty. He had a greater respect for his predecessors than to suppose that 100 statutes went through Parliament without anybody noticing that they involved the principle that the bodies that might be made liable for actions were placed under a duty by Parliament There was the further point that while in the interests of justice a reasonable time should be allowed for claims to be brought, it was also in the interests of justice that claims should be brought promptly. The necessity for bringing claims promptly would occasionally mean that exceptionally hard cases were cut out by the period of limitation. The alteration of the law embodied in this bill was, he claimed, a reasonable one. The publicity given by this debate would make the public realise the existence of this limitation, and would make local authorities realise that if with this extended period of time there were still cases of injustice the House of Commons would jealously watch and see that under the new provisions injustice such as had occurred in the past would not occur again.

Midwives and the Motor-licence Duty

During the discussion of the budget resolutions in the House of Commons on May 2 Mrs. Tate said that one body of people on which the increased motor-licence duty would fall with great severity would be the district nurses and midwives. They needed a car for the carrying out of their profession Since the passing of the Midwives Act it had been necessary in country districts to increase the funds raised towards the payment of a district nurse, and it would not be possible to raise the extra £6, £8, or £10 a year for the tax. She hoped that the Chancellor of the Exchequer would find some way of differentiating between a car which was a luxury and one which was a necessity for the carrying on of business.—S[illegible] Simon, Chancellor of the Exchequer, said he [illegible] that many people were obliged to use a motor-car for business purposes, and in such cases the expenses of the car were deductable for the purposes of income-tax. He would suppose that this principle would apply to a doctor who used his car for the purposes of his profession. He quite saw the force of the objections that had been raised, but he had thought it better to make an increase in this direct tax rather than, for example, to increase the income-tax or reduce the rates of allowance for income-tax. Under his proposals the man with a big and expensive car would pay, as he ought to do, more than the man with a small low-powered car.

Road Accidents

In the House of Lords on May 3, when Lord Newton asked that attention should be given to the report of the Select Committee on Prevention of Road Accidents, Earl De La Warr, President of the Board of Education, said a great deal of this problem was psychological. Some people were so accident-prone that whatever form of transport was used they would somehow get hurt. No regulations and no prosecutions were a substitute for a right feeling. Propaganda properly used was one of the most potent methods of prevention. A great deal was being done to make children traffic conscious by the thorough grounding in road behaviour that elementary and secondary schools gave their pupils. The Government were taking steps to deal with the question of noise, and an agreement had been reached with the motor manufacturers which would operate from July 1 The select committee's report was receiving the serious consideration of the Minister of Transport, and the fear that it would be pigeonholed was unfounded.

The Camps Bill

On May 3 in the House of Commons the Camps Bill received its third reading. Mr. Lindsay, parliamentary secretary to the Board of Education said that the purpose of the measure was twofold—evacuation in war-time and education in peace time. The peace-time uses of these camps were extremely important Many of the sites had been chosen and some of the camps would be ready, he hoped, by September. Much of the talk about the utilisation of these camps by adults and the possible effects on seaside resorts was completely beside the point. He wished to see relays of town children filling the camps during term-time, and in the holidays he would like to see the various juvenile associations using them on reasonable terms There were now between 18 and 20 recognised camps with a total accommodation of about 1400. About half of those who attended the present camps were sick and weakly children sent there on the advice of the medical officers in their districts. By the construction of the new camps it would be possible to send relays of children to the country. Two weeks in these camps would be worth two months in some of the schools in urbanised areas. Here was a chance of restoring what had been lost to many children—namely, an acquaintance with the country at an impressionable age. This bill was only part of a great national movement to restore to a rather over-urbanised and nerve-ridden world something of the peace and simplicity which came from living in and knowing about the country. A bill which presented the possibility of 250,000 children getting a fortnight in the country every year ought not to be regarded only as a measure dealing with evacuation, important as that was; the bill was also part of a more sensible and healthy approach to education.

Mr. Noel-Baker pointed out the difficulty of making camps which would be suitable for children at one part of the year and for adults for the rest of the year. He hoped the Government would establish experimental camps for adult holidays for which there was an enormous demand.

Mr. Spens hoped the Government would see that the areas in which the camps were placed were not subjected to trouble and expense as a result of the outbreak of infectious diseases He cited an instance on the Kent coast where scarlet fever broke out and a great number of children had to be sent to the local isolation hospital, the accommodation of which was fully occupied for several weeks Those who were responsible for sending the children to that camp refused to pay a penny towards the cost of nursing them in the hospital, and the expense fell on the local rates.

Dr **Haden Guest** said he hoped there would be a great development of these camps especially on the medical side The camps might be used more than was at present contemplated for open air education of large classes of children Large numbers of children went to the few open air schools already in existence, where they had special food and so on If these children could have their education in school camps they would be enormously improved in health, and if taken early enough many children might be restored to real normality It should be the aim to give every child in the country a holiday —Miss **Wilkinson** said this was not the time to discuss whether as a pleasant piece of educational policy it was rather nice for the Government to give a bit of money for an experiment to take slum children out for a fortnight's holiday A R.P wardens and committees knew that this was not a holiday camp bill, and they wanted to know to what extent this represented the Government's attitude towards camp evacuation She felt sure that hospitality evacuation would break down, but the *one* type of evacuation that would not break down was properly prepared sites and camps in areas which were unlikely to be bombed and which could be properly safeguarded

Mr **Elliot**, Minister of Health, said it should not go out that billeting was bound to break down They must rely on billeting in the main for the evacuation of children, mothers and sick people In passing this bill it would be wrong to omit any necessary consideration of war problems, but it would also be wrong to overlook the chance here given of doing a real piece of work which would redound to the benefit and health of the school children of the country.

Collections for Voluntary Hospitals

In the House of Commons on May 5 the Charitable Collections (Regulation) Bill was considered on Report Mr H G **Williams** moved an amendment designed to prevent hospitals being subjected to unnecessary trouble and their collectors to penalties owing to the fact that the operations of the hospital were concerned with people who lived in a number of police districts, or parts of a number of police districts He had put the amendment down at the request of the British Hospitals Association who were greatly perturbed on the matter Many applications would be requisite in these cases, and all the applications might not be made There would then be a risk of hospital collectors subjecting themselves to penalties

Earl **Winterton** said that the argument that there would be trouble in having to apply to several police authorities was one which applied not only to hospitals but to all charities whose activities extended to more than one police area without covering a substantial part of the country The trouble involved, however, would not be very great The charity would no doubt apply to the police authority for the area in which its activities were chiefly centred and give full particulars to that authority This could be stated in applications to other authorities, and the police authorities concerned would cooperate to avoid unnecessary duplication of inquiries —The amendment was withdrawn

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In the House of Commons on May 8 the Reserve and Auxiliary Forces Bill which simplifies and accelerates the procedure for calling up the reserves, was read a second time

QUESTION TIME

WEDNESDAY, MAY 3

Slum-clearance Expenditure

Mr **Tom Smith** asked the Minister of Health if he was aware that many local authorities had passed resolutions urging the Government to undertake a larger proportion of the expenditure on the demolition of unfit houses and the alleviation of overcrowding, contending that the rehousing of the working classes was a matter of national concern, and that local rates should not be unduly burdened in consequence, and whether any action was contemplated in the near future —Mr **Bernays**, parliamentary secretary to the Ministry of Health, replied The rates of exchequer subsidy for the purposes mentioned were fixed by Parliament only a year ago and my right hon friend has no reason to suppose that they are inadequate The statute provides for a review of these rates after Oct 1, 1941

Mr **Smith**: Is not the Minister aware that many local authorities in industrial districts which have a low rateable value are finding their work harder in this direction, and would it not be a good thing to have legislation to move these old houses out of existence more quickly than is the case today ?—Mr **Bernays** As regards the subsidy, the hon gentleman will bear in mind the fact that the overcrowding subsidy now payable balances any reduction that there has been in the slum clearance subsidy

THURSDAY, MAY 4

Concessions to Blind Income-tax Payers

Mr **De la Bère** asked the Chancellor of the Exchequer whether he would be prepared to make some additional allowance or remission of taxation to blind income tax payers who had to pay for certain expenses for which those who were not subject to this disability were not liable —Sir **John Simon** replied This suggestion has already received careful consideration and has been found to present serious difficulties I have further considered this matter, but I regret that I cannot see my way to make any special allowance or remission such as is suggested

Mr **De la Bère** Is the right hon gentleman aware that the cost of this provision would be quite a negligible amount ? Is he not further aware that all parties support the proposal to assist these people who are in so much need of assistance ?—Sir J **Simon** There are considerable difficulties in giving this class of relief There are gradations both as regards blindness and other forms of disability The matter was considered by the Royal Commission on Income Tax in 1920, and they reported that they could not advise any relaxation of this nature

Tuberculin-tested Herds and Inoculation against Abortion

Brigadier General **Clifton Brown** asked the Minister of Health why the regulation forbidding inoculation of cattle against abortion was maintained for a tuberculin tested herd, in view of the fact that inoculation for the same purpose was allowed for attested herds and that numerous county veterinary officers had advised that this regulation for tuberculin tested herds be abolished —Mr **Elliot** replied: As at present advised, I am not satisfied that an amendment of the orders removing the restriction as regards tuberculin tested milk would be justified, but in view of the representations which I have received I am considering the matter further in consultation with the Minister of Agriculture

Water Pollution by Gulls

Colonel **Heneage** asked the Home Secretary whether his attention had been called to the increasing danger to public health caused by the flocking of gulls to reservoir waters belonging to water undertakers, whether he would take steps to amend the law so as to enable water undertakers to prevent the pollution of their water supplies by the destruction of gulls wild duck and other fowl whose recourse to garbage heaps and sewage works and subsequent settlement on reservoirs constitute a serious danger to public health, and whether he would receive a deputation from the British Waterworks Association to discuss the matter.—Sir **Samuel Hoare** replied: I have not received any general representations on this subject, nor, I understand, has my right hon. friend the Minister of Health Any proposal to amend the law so as to permit the killing of gulls or other wild birds during the close season would need to be carefully examined, but I should be glad to consider any representations which the British Waterworks Association desires to make

Proprietary Toothpaste and the Poisons Act

Sir **Robert Tasker** asked the Home Secretary whether he was aware that a certain company had been endeavouring for three years, by application to the Home Office, to secure the exemption from the first schedule to the Poisons and Pharmacy Act of a well-known and widely used toothpaste manufactured in this country, that their appeal had been endorsed by over 500 practising dentists and licentiates in dental surgery; and would he take steps to ensure that the company's petition for exemption received early attention —Sir **Samuel Hoare** replied · The manufacturers of a toothpaste which contains an organic compound of arsenic applied to the Home Office in January, 1936, to have it excluded from the first schedule to the Poisons Rules, 1935, and so exempted from certain requirements of the Pharmacy and Poisons Act, 1933 It would not be practicable or desirable to exempt particular proprietary products, but very careful consideration was given to the question whether there should be a general exemption for dentifrices containing organic compounds of arsenic Full inquiries were made and I was advised that the application of the restriction did not adversely affect the interests of the public and that exemption should not be granted In July, 1938, the manufacturers again applied for exemption and submitted a list of dentists who are said to support the application Further inquiries were made and I have referred the matter to the Poisons Board for consideration at their next meeting.

Iron-ore Dust and Silicosis

Mr. **Thorne** asked the Home Secretary if he could give any information in connexion with the inquiry into silicosis deaths brought about by the inhalation of dust from iron-ore, and whether he had received the verdict of the jury at the inquest that was held at Romford on April 22 —Mr. **Peake**, under-secretary, Home Office, replied: As a result of inquiries by the Medical Research Council it is recognised that hæmatite iron-ore mining is liable to give rise to silicosis, and by an order made in 1935 the silicosis scheme was extended to cover underground workers in this industry. I have seen a press report of the inquest referred to in the second part of the question, from which it appears that death was due to silicosis, but that the deceased workman was last employed in the iron-ore industry in 1933 My right hon. friend has no statutory power to extend the scheme retrospectively so as to cover cases where the workman had left the industry prior to the date of the order.

Medical Certification of Mentally Deficient Children

Sir A. **Wilson** asked the Minister of Health whether his attention had been drawn to the judgment of the King's Bench Divisional Court on April 26 as to the validity of a certificate under the Mental Deficiency Act, 1913, signed by two doctors, one of whom had not even seen the person to whose mental condition he testified; what steps he proposed to take by amending the regulations or otherwise to prevent injustices consequent upon such unprofessional conduct; and whether he would call upon the Board of Control for a special report on the subject —Mr **Lindsay**, parliamentary secretary to the Board of Education, replied · Under the provisions of section 31 of the Mental Deficiency Act, 1913, it is the duty of the local education authority to make arrangements, subject to the approval of the Board of Education, for ascertaining what children are incapable by reason of mental defect of receiving benefit from instruction in special schools or classes, and for that purpose to obtain in each case a certificate, in a form prescribed by the Board of Education, from [illegible] duly qualified medical practitioner approved by the [illegible] Education. The section further provides that in cases of doubt the matter shall be determined by the Board of Education. The approved arrangements require the child to be examined by the approved medical practitioner who is to give the certificate In the case referred to in the question the court appears to have criticised the proceedings of the local education authority on the ground, first, that the certificate was signed not only by the approved medical practitioner who had examined the child but also by a second medical practitioner who had not examined the child, and secondly, on the ground that the case (being one of doubt) was not referred to the Board of Education for determination There is nothing in the approved arrangements to countenance the signing of the certificate by the second practitioner who has not examined the child, but my noble friend is making further inquiries in the result of which he will consider whether any change in the prescribed forms of certificate is desirable.

MONDAY, MAY 8

Typhoid at Nottingham

Mr **Liddall** asked the Minister of Health what was the cause of the recent typhoid outbreak in Nottingham which had been the subject of investigation by his officers —Mr. **Bernays**, parliamentary secretary to the Ministry of Health, replied · The investigations in connexion with this outbreak were carried out by officials of the town council, though a medical officer of my department visited Nottingham at the request of the medical officer of health to confer with them in order to ensure that all practicable steps were being taken to cope with the outbreak. A statement was issued by the council in the local press on March 23, which indicated that the outbreak was due to the consumption of food which had a very limited distribution

Uniforms for Civil Defence Nurses

Mr **Lipson** asked the Minister of Health if uniforms would be provided free to women who were willing to volunteer for training as nurses under the National Service Scheme.—Mr. **Bernays** replied: An overall and cap will be provided free to all women who take the short course of training for enrolment as nursing auxiliaries in the Civil Nursing Reserve.

Gas-masks for Hospitals and Doctors

Sir **John Mellor** asked the Lord Privy Seal whether, after consultation with the medical profession, he would make special arrangements for a supply of gas masks to be available to hospitals and practitioners of the type found most convenient for surgical operations.—Captain **Dugdale**, Lord of the Treasury, replied · My right hon friend has arranged, in consultation with the Ministry of Health, that all medical and nursing personnel in hospitals or first-aid posts in vulnerable areas shall be supplied with the civilian-duty type of respirator.

Sir J. **Mellor**: Do recent experiments confirm that this type is the best for the purpose?—Captain **Dugdale**: So I am given to understand.

TUESDAY, MAY 9

Rheumatism among Mineworkers

Mr. **David Adams** asked the Secretary for Mines whether he was aware of the establishment of a clinic for the treatment of rheumatism among mineworkers at Horden collieries; and in view of the prevalence of this affliction among miners he would give special attention to the experiment with a view to its general extension in the coalfields —Mr **Geoffrey Lloyd**: Yes, Sir. I am aware that discussions are in progress for building and equipping a clinic at the Horden colliery baths by means of grant from the Miners' Welfare Fund This experiment will be the first of its kind and I shall watch the results with close interest.

Vaccination of Army Recruits

Mr **Leach** asked the Secretary of State for War whether he would follow the precedent of his department in [illegible] in regard to the vaccination of recruits and suspend the vaccination regulations so far as conscripts were concerned. —Sir V. **Warrender**: Yes, Sir.

LETTERS TO THE EDITOR

PSYCHOTHERAPY BY LAYMEN

SIR,—In your issue of April 29 Dr Clifford Allen points out the dangers which might attend the recommendation of the British Medical Association to admit the laity with certain reservations into psychotherapeutic practice The medical profession is sometimes termed the most powerful of all trade unions This dictum may contain a modicum of truth, but it certainly omits one matter of vital importance Medical etiquette custom and practice do not derive from the whims of medical despotism, they were primarily evolved in the interest of the patient Medical qualifications illustrate this fact They give the public some guarantee of the bona fides of their possessors There is no good reason why psychological medicine should be differentiated from the rest of medical practice

In the first place mental maladjustment forms a large, if not a major, part of illness in general In the second place the adequate treatment of the patient who is "physically ill" may also require a *certain degree of sound psychological insight* gained in part by right training, on the part of the doctor Is it not equally necessary that the person dealing with mental illness should have a sound knowledge of the physical aspects of the patient's personality? But the reverse—namely, a one sided attitude to the neurotic patient—is the possibility which the proposed changes may bring with them

In his lecture on neurophysiology and psychology, which you reported last week, Dr Emanuel Miller maintains that the solution of the problem regarding the respective provinces of these two branches of medicine lies neither in the enthronement of psychology at the expense of neurology, nor vice versa Both must abdicate in favour of a biological attitude —the whole in place of the partial view After all the very derivation of the word "health" is from the Anglo Saxon *hál*=whole, hence *wholth* or *health* Some years ago a man could be qualified either as a physician or as a surgeon, now qualification in both branches is essential before legal status is granted to the doctor Should there be any step back from this?

One further point The holding of a medical degree gives its possessor the legal right to practise, but it carries with it corresponding responsibilities The layman who is given the right to practise psychotherapy does not incur a like obligation This fact may have far reaching, even serious, consequences

I am, Sir, yours faithfully,

New Cavendish Street, W 1 May 8 HILDA WEBER

ILLNESS IN SMALLPOX CONTACTS

SIR,—A few weeks ago Dr C R Box was good enough to suggest, in a letter published in your columns, that interest would be added to my article on illness in smallpox contacts which appeared in your issue of April 8, if "exact details of the method of vaccination were given" *Of the 7 smallpox* contacts whose illness formed the subject of my article 6 were revaccinated during the time which elapsed between contact and the development of the subsequent illness In 4 of these 6 the revaccination was carried out with *Government lymph*, each person being done with a different batch The remaining 2 were both revaccinated with one batch of a proprietary *lymph* In all 6 the revaccination was carried out on the left arm, the contents of not more than one tube of lymph being used for each person In 5 the arm was prepared, after preliminary washing with soap and water, by methylated ether In 1 soap and water only was used In all 6 only one insertion was made In 4 the insertion was carried out with a nib type scarifier, and in 2 by means of ordinary household needles, the heat of a flame being used for sterilisation in all instances In all 6 two scratches were made, and in all the lymph was allowed to dry before a dressing of plain lint was applied In 1 instance a control scratch was made on the same arm as the insertion

The 7 persons referred to in my paper had been vaccinated and revaccinated on previous occasions, but I have been unable to obtain technical details of these events It may be said, however, that in 4 of them the primary vaccination to which they were subjected in infancy was, to judge from the arm scars, by four insertions In 3 instances, where there was some recollection of the manner in which previous revaccination had been carried out, single insertions had been made

In a letter published in your issue of April 22 *Dr M H Gordon inquired regarding the distribution* of non contact cases which subsequently occurred among the population of 42,000 resident within one and a half miles of the hospital in which the imported case was nursed There were 6 such non contact cases which can be arranged in four groups that are neither directly connected with each other nor with the first imported case The 1 case composing the first of these four groups, the first case of the second group (2 cases in all), the first case of the third group (2 cases in all) and the 1 case in the fourth group were resident at the time of infection at distances of approximately a quarter of a mile, one and a half miles, one mile and three quarters of a mile respectively from hospitals containing at least 1 case in the acute stage In view of the limited number of cases which occurred in this outbreak, figures for the *aggregate incidence per hundred houses* within stated distances of the two hospitals concerned would not appear to be significant

I am, Sir, yours faithfully,

E T CONYBEARE

Ministry of Health, Whitehall, S W 1, May 5

SODIUM AND CHLORINE RETENTION

SIR,—Reading Dr E N Allott's article in your issue of May 6 (p 1035) I am reminded of a case I saw some months ago

A girl, aged 12 years, with a four months history of increasing headache and vomiting, had an astrocytoma occupying both optic thalami and practically filling the interpeduncular space It was beginning to invade the optic tract on the left side and the optic tract on the right side was tightly splayed over it It so happens that among the examinations made two weeks previously on the girl's admission to the Hospital for Tropical Diseases, were certain which bear on the points raised by Dr Allott These determinations were (1) blood urea [illegible]0 mg per 100 c cm chlorides, 112 mg per 100 c cm, (2) urine acid sp gr 1 022, no albumin no casts or cellular deposit, chlorides only trace and urea 2 3 per cent; (3) blood pressure 130/175

There was no indication of any renal damage and the surprisingly low chloride content of the urine fits in with Dr Allott's interesting thesis

I am, Sir yours faithfully,

Harley Street W 1 May 8 F MURGATROYD

BIOCHEMISTRY OF MALIGNANT GROWTH

SIR,—The leading article in your last issue and your abstract of the paper of Kögl and Erxleben call to mind the theories of John Beard of Edinburgh, who in 1907 published his "conclusion that the albumins of cancer and of malignant tumors in general must be dextro bodies" It would now appear that more than thirty years ago Beard was not wholly off the right track. In the *Medical Record* of March 29, 1913, Beard published a paper "on the occurrence of dextrorotatory albumins in organic nature." While fully recognising the speculative and sometimes polemical nature of the writings of this embryologist, from the time when he proceeded from his researches on the migration of elasmobranch germ-cells to theorise on the cancer problem, it is appropriate now to remember his researches and writings The time has not arrived when to these a final value can be assigned. In view of the importance attached to trophoblast in relation to the cancer problem by Beard and also by Blair-Bell the results of stereochemical analysis of chorionic tissue will be of particular interest.

I am, Sir, yours faithfully,

Cuminestown, Aberdeenshire, May 8 A. T. FORBES.

IS RADIOLOGY A SPECIALTY?

SIR,—Dr. Jennings's letter in your issue of April 29 cannot be allowed to pass without comment. Of his many propositions the chief seem to be: (1) that diagnostic radiologists should be abolished, (2) that radiographers should have more responsibility; (3) that various specialists should supervise the radiological work appropriate to their department, (4) that students should be taught more diagnostic radiology. May I pass straight to the second proposition which also involves the first. I have a high respect for the work of radiographers but I do not think that their responsibility should be increased, particularly as diagnostic radiology is becoming more and more complex.

One of Dr. Jennings's arguments for the abolition of radiologists is that private patients have to see too many specialists, and that their bills become too great. In that case let us scrap pathologists, let us scrap clinical biochemists. I have seen many a mortuary attendant perform a beautiful autopsy, and many a laboratory assistant is a skilled microscopist. Whoever doubts the accuracy of the laboratory assistant's blood-sugar estimation, and why should not the physician interpret the pathological findings?

Returning to the problem of radiology, surely it would not be wise to ask technicians, for example, to apply pressure on ureters in pyelographic examinations, or to fill the fourth ventricle in air examinations of the brain? Modern radiology does not consist in "shooting" a number of standard pictures, but in analysing each case on its merits and in attempting to give an exact diagnosis. The exact analysis of a difficult acute abdominal case is surely outside the scope of a technician. Should the investigation be carried out by a team consisting of an abdominal surgeon and a gastro-enterologist backed up by a technician? One illustration occurs to me, and many others could be given, of Dr. Jennings's contention that specialists should do their own radiology. I have recently had the opportunity of seeing and comparing the neuroradiological work at two large neurosurgical clinics on the Continent. In the one the radiologists work in close collaboration with the surgeon, in the other the surgeon works in conjunction with his X-ray technicians. The difference in the quality of the work in the two places is immediately apparent.

Dr. Jennings says that nothing is to be gained by the radiologist's report "increased root shadows" or "*greater density at one apex.*" I heartily agree; but also nothing is to be gained by the physician's report "slight chill on the liver, stomach, sciatic nerve or what-not." Both types of diagnosis are based on incomplete examination, ignorance, or both Neither clinical medicine nor diagnostic radiology should be damned on such grounds. May I suggest that some of Dr. Jennings's problems would be solved by closer collaboration between clinician and radiologist, rather than the not infrequent practice of working against one another.

Finally, I strongly endorse the suggestion that students should be taught more diagnostic radiology Dr. Jennings's friend states that English students know more about microscope slides than X ray films. Would that they knew much about both—not to make them specialists in either branch, but to make them better doctors.

I am, Sir, yours faithfully,

Stockholm, May 5. JAMES BULL.

MEDICAL CELIBACY

SIR,—*It is disturbing to note the increase* which appears to have taken place in advertisements for single men appearing in medical journals Other workers are making some effort to abolish these unnatural restrictions; but medical men seem prepared to accept this unwarrantable interference with their liberty without a murmur of protest. There is no limit to the number of children that a mental defective may have if he or she does not happen to be certified But a man who has the necessary intelligence and perseverance to become a medical practitioner is not even allowed to marry. I should be the last person to exaggerate the importance of heredity, but if it plays any part at all—which one must concede—then this state of affairs is hardly in the national interest, especially at a time when a falling birth-rate is arousing nation-wide concern

It is hard to see what possible justification such a restriction can have. It is certainly untrue to say that a married man pays less attention to his work. One is reluctantly forced to the conclusion that the ban is merely an excuse for niggardliness on the part of the hospitals or authorities concerned

I am, Sir, yours faithfully,

B. H KIRMAN,

Secretary, Medical Group, Left Book Club.

St Mary Cray, Kent, May 5

TOLERANCE OF PHENOL VAPOUR

SIR,—With further reference to this subject (cf my letter in your issue of March 18), I have today subjected myself and a collaborator, Mr Edw Burgess, to phenol vapour *The same room* and apparatus were used as in all the experiments referred to in my letter—viz, a small laboratory measuring 12 ft. 11 in long by 10 ft. 4 in wide by 10 ft 5 in high, and of approximately 1400 c ft. capacity. It has well-fitting window and door, but no fireplace or ventilator, and was not sealed, since former experience had shown that there is practically no leakage. Messrs. Calvert's vaporiser was u pre-heated electrically for twelve minutes before addition of the phenol The phenol is weighed in a tared beaker, and the beaker with phenol is inverted into the heated container of the vaporiser The phenol vaporises as a column of beautiful dense wh "smoke," which ascends, rolls round and down, and finally diffuses throughout the room, forming for a few minutes a thickish fog, which soon clears and dissipates Three tests were done in the course of two hours with 28, 50 and 60 grammes of phenol, equivalent to about 20, 35 and 42 g per 1000 c ft respectively We sat in the closed room during the course of each test (for about twenty minutes), but suffered no inconvenience, there is a slight odour and taste of phenol, but no lacrimation and not a cough or a sneeze even with the largest quantity As it had been found that 35 g of phenol per 1000 c ft effects surface sterilisation of micro organisms, we did not proceed beyond the 42 g tested, but I feel sure that we could have tolerated more Our clothes were so saturated with phenol at the end of the tests that, on returning home, everyone without prompting or knowing what had been done noticed the strong odour, which was apparent even two hours later

I am, Sir, yours faithfully,
Greenwich, S E 10, May 4 R TANNER HEWLETT

DOCTORS AND THE PREVENTION OF WAR

THE following statement has been drawn up by the Medical Peace Campaign and signed by Prof J A Ryle, president It is addressed to members of the medical profession throughout the world

Realising the suffering and disease which are caused by war, and accepting our medical responsibility to prevent disease as well as to treat it when developed, we urge the governments of the world to take action to make war impossible

In particular we suggest that, in order to combat the present emergency, Great Britain, France, and Russia should declare that they stand united and determined to resist all further aggression by military force if necessary, and that the governments of these countries should invite all other countries, irrespective of their form of government, to associate themselves with this declaration

We maintain that the only way to eliminate all possibility of future war is the establishment of the rule of international law, based on the principles of justice to all and backed, so long as this remains necessary, by overwhelming military and economic strength To this end we urge that a conference be called to discuss the practical measures which should be taken

Finally, as an organisation representative of medical opinion and regarding medicine as the most international and humane of all professions, we would remind our colleagues in all countries of the great part which they may yet play in influencing public opinion on behalf of peace.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 29, 1939

Notifications —The following cases of infectious disease were notified during the week Smallpox, 0, scarlet fever, 1016, diphtheria, 816, enteric fever, 20 (27 "expected"), pneumonia (primary or influenzal), 959; puerperal pyrexia, 209, cerebrospinal fever, 87, acute poliomyelitis, 7, encephalitis lethargica, 4, dysentery, 62, ophthalmia neonatorum, 90 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on May 5 was 3139 which included Scarlet fever 665, diphtheria, 599 (carriers 22) measles 10 whooping-cough 1059 puerperal fever 13 mothers (plus 7 babies) encephalitis lethargica 304 poliomyelitis 3. At St Margaret's Hospital there were 23 babies (plus 11 mothers) with ophthalmia neonatorum

Deaths —In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 5 (1) from measles, 4 (0) from scarlet fever, 29 (5) from whooping-cough, 21 (4) from diphtheria, 41 (7) from diarrhœa and enteritis under two years, and 53 (6) from influenza The figures in parentheses are those for London itself.

Birmingham reported the only death from typhoid Liverpool had 4 fatal cases of whooping-cough, Manchester, West Hartlepool, Birmingham and Chesterfield each 2 Fatal cases of diphtheria were scattered over 14 great towns, Hull, Birmingham, Derby and Cardiff each reporting 2 Birmingham had 7 deaths attributed to influenza Liverpool, Lincoln and Swansea each 3

The number of stillbirths notified during the week was 275 (corresponding to a rate of 40 per 1000 births), including 56 in London

OPHTHALMIA NEONATORUM IN GREAT BRITAIN

ON April 29, in reporting a discussion on ophthalmia neonatorum held by the International Association for the Prevention of Blindness, we gave figures that may convey a false impression of the prevalence of the disease We quoted Dr A H H Sinclair as saying that "the incidence per thousand live births in Scotland ranged between 15 5 *per cent* and 19 2 *per cent* in the years 1933 to 1937" The italicised words should not, of course, have been included So brief a report may also suggest that the figures refer to cases in which there was permanent damage to the eyes, whereas in his report to the association Dr Sinclair was able to show that during the past five years in Great Britain there has been an average of 50 cases of ophthalmia neonatorum of sufficient severity to impair vision seriously or cause total blindness The following tables taken from his report show the number of notified cases, the ratio per thousand live births, and the number of cases resulting in partial or total blindness, from 1933 to 1937 In this five year period 1 child became totally blind in Scotland, 25 in England and 7 in Wales

SCOTLAND*

Year	Notified cases	Number per 1000 live births	Cases with loss of vision	
			Total blindness	Partial blindness
1933	1472	17·0	—	7
1934	1482	16 7	—	5
1935	1345	15 3	—	5
1936	1379	15 5	—	5
1937	1658	19·2	1	2
		ENGLAND†		
1933	4056	7·0	8	59
1934	4187	7 5	6	30
1935	4369	7 3	7	36
1936	4556	7·6	6	36
1937	5050	8 3	7	31

* From the annual reports of the Department of Health for Scotland
† Confirmed by the Ministry of Health, London

POSTGRADUATE COURSES IN GERMANY.—International postgraduate courses in the various specialties will be held in Berlin, Vienna, Hamburg, Cologne, Munich and other German medical centres during the summer of 1939 Further information may be had from the bureau of the Berliner Akademie für ärztliche Fortbildung, Robert Koch Platz 7, Berlin, N W 7.

OBITUARY

MARGUERITE KETTLE

M.R.C.S.

ASSISTANT EDITOR OF THE LANCET

Mrs. Kettle's death on May 4 means much to many people, for she had a very full life. The following record of it shows the range of her work and gives some idea of the impression she made. Her opportunities were unusual, and her marriage to the late Prof E. H Kettle, F.R S., enriched the lives of both But her influence did not depend on circumstances so much as on the unsparing use of her many gifts.

She was born on June 2, 1887, at Clapham Park, the younger daughter of Leopold Pam and Philippine née Furth Her home, in her own words, "was a large rambling house with a garden of a type not now much seen—lilac, acacia, japonica, with a border of lime trees, a hugh mulberry tree with a seat half-way up, a tennis-court just not long enough to have a good run back There were stables and a landau and a victoria and one horse, latterly hired from Wimbush. Almost any day one's mother drove through Battersea and over Chelsea Bridge into the Park at the Albert Gate in the afternoon, and often one went too on the back seat." She was educated at Queenswood School, then in Clapham Park, as a day-girl. In 1903, before entering for Matric, she was taken away and sent to Madame Yeatman's finishing school at Neuilly, "where there were 70 other English girls so I never learnt French" On her return she took lectures at King's College, under Miss Faithfull the vice-principal, and then experimented—"without success," she tells us—with coming-out and social life Membership of the Royal Institution and the suffrage campaign were more to her mind, but militant methods caused distress at home, where her father was ill, and she determined to break away and in 1910 went with a brother to South Africa. By this time she had decided to take up medicine, and the reasons for this decision should also be given in her own words:

> "My interest in it started in 1902 when, disliking geography (!), I was allowed to take some logic instead and was thrilled by Jevons and John Stuart Mill, and started studying psychology and ethics with a view to reading for a 'mental and moral' degree. I was profoundly dissatisfied with psychology as then taught (Stout and James) because it seemed to have no physical basis and kept on getting mixed up with pseudo-spiritual values. It seemed certain that the way to approach it must be through physiology. A doctor must know all about the brain cells, and *exactly* what happened when they were actively producing thoughts, so it was obviously necessary to become a doctor and start equipped."

And actually this appreciation of values remained with her; and for long into her medical career she played with the thought of some kind of practice for herself in which her interest in psychology could be turned to good account.

She took the London Matric in South Africa on a correspondence course and returned, reluctantly, in 1913 She entered the London School of Medicine for Women, going on to St. Mary's in 1916 after passing the second M.B At that period of the war new chances for medical study were open to women and she was in the first group at St. Mary's. Her mind was now mature and she could criticise the conditions of medical study—it was a critical time for women—when other students took them for granted

After qualifying in 1918 she was for a time resident obstetric officer, but in the same year she married Dr. E. H. Kettle Their home in Nottingham Place became a natural meeting-place for St Mary's students, past and present, and was the first of the open houses that remained so freely open throughout their married life For several years "Pam," as she was still called, continued medical work of various kinds at Great Ormond Street and the National Heart Hospital, and for three years she was in charge of the antenatal department at Archer Street But almost at once she found her real vocation Work on a child-welfare journal which had then just started gave her an almost fortuitous introduction to the editorial room of THE LANCET and thus led to a half-time engagement. The allocation of her time was always difficult On the one hand she had her home to keep up; and she was not only her husband's companion but his stay and counsellor, in all the stages of his career, at St Mary's, Cardiff, Bart's, and finally at the British Postgraduate Medical School at Hammersmith On the other hand she found herself unable to ration her office time if she was to develop to her own satisfaction the ideas that often crowded on her.

One of her early successes was a series of articles on Modern Technique in Treatment, which was republished in four volumes, and she later inspired and took charge of many other series, including the Clinical Interpretation of Aids to Diagnosis, Prognosis, and the Grains and Scruples still with us. This supplementary work should have been enough: it was as much as anyone in her position should have attempted; but when the idea of an inquiry into the recruitment of nurses occurred to her she felt she had no choice but to see it through—until THE LANCET Commission on Nursing was conceived and its report was delivered Few journalists have opportunities for writing over their own name, and Mrs Kettle least of all. But the form of this report, the crispness of its message, and the logical sequence of its thought remain the best token of the enterprise, insight, and power of workmanlike execution possessed by the hon. secretary. The natural result of this achievement was her appointment in 1933 by the Ministry of Health as a representative on the General Nursing Council Apart from this the only substantial paper that she signed was an account of an inquiry into the fate of a population of women medical students, published in these columns in 1936, which illustrated her growing interest in statistical methods

Though she became a professional writer her outlook never became literary She had never written for the fun of it, and as a journalist she was always more interested in the fact or the idea than in its presentation. The presentation must be accurate—that was all she cared about. And in seeking precision she came to handle language at least as well as most writers who start with a classical education or a love of writing. She had an eye for fine shades of meaning and could almost always alter a letter or an article to its advantage, on the other hand her own work—though her manuscripts were a chaos—could seldom be improved except perhaps as regards readability and detail. The minor points of "style," punctuation, and spelling she always found an intolerable nuisance; she could not remember the rules, and she thought mere consistency a waste of time Nor did she really care much what the journal looked like—whether its illustrations were too big or too small, or whether the articles appeared attractive or not The journal was not an end in itself it was an instrument and not a composition, and unlike most journalists she was an executant rather than a would-be composer Accordingly she had little use for the ingenious stringing together of words, and colleagues who had taken pains to present a subject freshly were depressed to find how little she thought of any editorial that did not convey "inside information" or authoritative judgment To the office, as a nominally part time worker, she came with an external point of view, based on the contacts of her immense acquaintance among practical and busy people—many of them pathologists—who liked facts rather than theories She never for a moment believed that the truth is revealed to babes, and with a surprising orthodoxy she accepted the views of experts unquestioningly, so long as she believed them to be expert She had little use for suggestive evidence and still less for suggestive hypotheses, though she could say so with great politeness She was never impressed by mere novelty

If as a realist she had a chastening effect on her collaborators she had an immensely stimulating effect on THE LANCET More and more her function, as a part timer having less routine to manage, was to prevent monotony and introduce new thought and new ideas The ideas may not have been more frequent than other people's the difference was that the moment one was seen it filled her mind A casual remark in a letter from an aunt would strike her, and she would interrupt everyone's work for a morning while she discussed its implications Three long (and unescapable) telephone conversations would follow, she would sit up half the night, and next day there would be a leader on her aunt's dilemma, or a scheme for a series of articles that would be useful to her aunt's doctor She had a very good idea of current demand and by whom it could be met, and when once embarked on a project she carried it through, regardless of obstacles Everything went down before an "urge", time and convenience, her own and others', were as naught until it was satisfied. Though in some ways deeply sensitive to the reactions of other people she was prepared to discount them she would telephone to anybody, and if the anybody was ascertained to be away in the train between Oxford and London that made no difference, the station master at Reading must comb the train for him and deliver her message Whatever she did, she did with her whole might, and perhaps the most characteristic thing about her was the infinite trouble she took over the difficulties of her friends She would spend all her leisure for a month in trying to get someone round a corner, and many will remember how they went to her for a little advice and found themselves thereafter supported by the whole force of a strong nature and the skill of an experienced diplomatist Emotionally she was one of those who continually radiate instead of absorbing, she was unshockable, and her standard of loyalty was the highest Unhappily her capacity for giving and doing went with an incapacity for accepting and resting Apart from clever clothes, a little *dégagé* housekeeping, Wagner at Covent Garden, and an occasional novel she had few interests outside medicine, social life, and the complicated personal problems so often put before her She lived, somewhat conventionally, in her own age and her own urban environment: she was neither a historian nor a gardener, and at times when her age and environment could offer little she had few possessions in reserve elsewhere

Mrs Kettle's outstanding personal work—the attempt to improve conditions of nursing—was, as we have indicated, a by product of her journalism The small idea was sown and took root as usual in the day's routine, but grew so rapidly that her chiefs soon found themselves committed to an enterprise occupying most of her time (and some of theirs) for eighteen months By this she was revealed to a larger circle as a reformer of remarkable power Never a theorist, and wholly unsentimental she was nevertheless a progressive, she had both feet on the ground and a politic approach, but yet a spirit that was indomitable so long as an end was in view Her resemblance to Florence Nightingale—the Miss Nightingale who harassed the War Office for half a century—was made more conspicuous by the chance that brought her to work for nurses But there were many other objects to which she devoted the same intelligence, sense, and fearlessness

The Kettles had no children, and from the strain of her husband's illness Mrs Kettle never fully recovered She resumed her work at THE LANCET though it was interrupted by ill health and unfruitful holidays She tried to take up the threads of her life where they had been broken, and attended governors' meetings at Queenswood School and St Helen's, Northwood, and council meetings of the London and Counties Medical Protection Society A week or two ago she was at the annual conference of the Medical Women's Federation, of which she was a vice president, and she shared as usual in producing last week's issue of THE LANCET But her work, though its standard and even its brilliance was maintained, was too expensive in effort, and she could never be convinced that recovery was coming

FROM A FELLOW STUDENT

Craggs writes I lived and worked with Pam during her student days One of our first jobs together was learning bones, and right at the beginning came the statement in Gray's Anatomy that we should look for an "eminence sometimes a depression" Pam's logical mind was outraged at this vagueness either it was one or the other, or if all this stuff was uncertain what was the good of trying to learn it? The phrase remained a catchword for years among us to describe any uncertainty whether of daily life or medical matters She was then living in rooms at Hunter Street over the school where she was visited by students and staff, even the domestics chose her to take their troubles to It was a time when attempts were being made to obtain admission for women to hospitals other than the Royal Free and her advice was always sought in these negotiations though her wider and saner outlook was not always palatable to the more militant She was with the first twelve women to enter St Mary's in 1916 and again her wisdom was invaluable to us during the inevitable friction of the start Within the first few weeks the women were asked to leave a demonstration and it was suggested that, following suffragette principles, we should stay until removed Pam persuaded us to depart peaceably and arranged the whole affair satisfactorily for us through the dean At St Mary's without losing touch with her old friends, she knew staff and students. Seldom can any woman have received more confidences or been admitted more frequently to the inner history of any happening She seemed not to realise how much greater were her intellectual powers and personality than those round her, and having no desire for leadership she never knew how much she was a leader

As a student her methods of work, though they gave results—she never failed at any examination—were incomprehensible to those trained in the usual note-book tradition. She would be found any evening seated on the floor before the fire, the carpet littered with books and papers. This was partly due to her acknowledged sin of untidiness, but also to a method of work we nicknamed "retropulsion." Dealing for instance with a disease of the stomach she would go back from its clinical aspect to its pathology, history, anatomy and physiology and —according to us—its embryology and evolution as well It was necessary to her to understand wholly what she was reading from the beginning. But always the uncertainties of medicine bothered her; if she had difficulty with a case she believed it due to her own inefficiency. This lack of confidence would have handicapped her in clinical practice. Without doubt she found her vocation in journalism.

CAPACITY FOR FRIENDSHIP

Lord Balfour of Burleigh writes · The adjective which best fits Pam Kettle is genuine, she was real through and through, there was nothing sham or artificial or affected in her composition or in her outlook. Therein perhaps lay the secret of her unlimited capacity for friendship with all sorts and conditions of men and women She combined a keen critical faculty, fostered by her training in medicine, and developed by years of analytical and constructive work for THE LANCET, with a kindness of heart as discriminating as it was inexhaustible. She was the ideal confidante and helped many a lame dog over his stile or along a road which would have been too hard for him unaided. No-one ever came to her in vain for help either in personal difficulties or on practical sociological problems. She brought to every question the same informed enthusiasm; she had a gift for directing into fruitful channels the zeal of the uninstructed, which would otherwise have run to waste The effort to provide anæsthetics in childbirth was greatly helped by her, she was interested in better housing for the poor long before its social value was generally recognised, and she was always helpfully constructive in discussion and furtherance of these and all other social reforms No trouble was too great if the effort could contribute towards making this world a better place Her mainspring was her devotion to her husband and his to her; to say that she never got over his death is a faint reflexion of the truth. They were so completely members of one another that their separation was a blow like the severance of a vital part A host of friends both of higher and of lower degree will mourn her passing; her place in their hearts will never be filled

Dr. A H T. Robb-Smith writes: To many Mrs Kettle's death is not only a great personal loss but a break in a traditional hospitality in the Oslerian style. While the late Prof. Kettle was at St. Bartholomew's Hospital, their house in Holland Park was another "Open Arms" where one would meet a happy medley of distinguished clinicians and pathologists, junior demonstrators and members of the football teams, skilfully attuned by their delightful hosts, while the dachshunds Pride and Prejudice added to the gaiety. At other times one would join in their quiet family life and it was after such occasions that many would come away the better for both good conversation and advice When Prof. Kettle went to the Postgraduate School this bonhomous atmosphere was maintained though marred so soon by his ill health, and in the months before his last illness Mrs. Kettle very gently and unobtrusively saved him many worries and fatigues After her great travail she bravely continued in the old manner and we would see her at tea at the London meetings of the Pathological Society, eager to inquire of all that was happening both to individuals and in matters pathological One was always sure of a welcome at her home and there find young and old sharing pleasurable conversation and seeking comfort and advice from one whose heart was eaten with sorrow.

THE WOMAN'S MOVEMENT

Mrs Oliver Strachey writes: The death of Dr Marguerite Kettle is a true loss to all who knew her not only to them but to many who only knew of her work, and to many still to come who will not even know that she lived. For she was one of those who are useful to their fellows, and whose influence lives after them. Her interest in the woman's movement, and her belief in its value to the whole community were practical things, expressed in hard work and daily life; and in putting her abilities and her energy at the service of the nursing profession she did good which is as yet impossible to measure. She was the hon. secretary and the moving spirit in THE LANCET Commission on Nursing, and her work for that report led on to her appointment to the General Nursing Council The findings of the commission were not, indeed, immediately accepted, and some of these were, and still are, vigorously debated within the profession. But the effect of the report was far reaching. The stir of outside influence and of modern methods of investigation was brought to bear upon this great women's profession, and the results are not yet in sight. In all the mass of her detailed work for nurses, Dr Kettle showed unwavering idealism. She was practical and realist at all times, avoiding theory and accepting compromise But she never forgot the basis which inspired her—namely, her belief that women's work in the world was of value to the world In medicine and in nursing she knew the conditions of their work; and she was sure that only good would come from every advance, whether in status, or in pay, or in public esteem. She was one of those whom Florence Nightingale would have called "A Saviour," and her work lives after her.

THE REFORMER AT WORK

Dr. Margaret Jackson writes: When she was secretary of the Commission on Nursing she seemed to foresee the pattern of the inquiry not in terms of single items but as a growing whole. Her grasp and precision informed the entire plan and she was tireless even at those points where dull routine work was heavy. She naturally felt warm sympathy with nurses, but she never allowed the critical faculty of her mind to be governed by the partisan. I think she never made a hasty judgment, and her balanced opinion was accepted as a guide in every discussion. As though in protest against this [illegible] intellectual discipline she displayed an engaging untidiness in other ways The morning I arrived in the office she led me to her desk, invisible beneath a fine harvest of papers "I am not tidy," she remarked; "I have other virtues" But she managed to keep even her untidiness under her [illegible] control. She used to put all relevant papers in a large suit-case which journeyed about with her wherever she went at that time When [illegible] memorandum or other was wanted it could always be found—at the cost of a hunt through the

The searcher was apt to find the vital document keeping strange company—an apple, some loose change, *several pairs of gloves, snatched up at random* on successive days, and packets of sandwiches going back even further, provided by her anxious cook and neglected by the recipient While the commission was sitting she worked as relentlessly at home as she did in the office She was devoured by the task, as an artist is devoured by the picture he is painting

NURSING

Mr H L Eason writes Dr Kettle was appointed to the General Nursing Council in 1933 as a representative of the Ministry of Health Her appointment was the almost inevitable consequence of the work she did in connexion with THE LANCET Commission on Nursing from 1930 to 1932 She served on the education committee of the council in 1934, 1935, 1936, 1937, and 1939, and in committee she was exceptionally useful and efficient Devoted to the welfare of nurses and *to their primary and higher* education, she used all her gifts to this end She knew what she wanted, made her points and was a sturdy fighter for her cause But despite her definite, clear cut views, Mrs Kettle could not make an enemy as she had a charming manner and her disinterestedness was apparent The nursing profession have lost a good friend and the General Nursing Council a valued member

Miss E E P MacManus (matron of Guy's Hospital) writes I first made Mrs Kettle's acquaintance in 1931 when she and other members of THE LANCET Commission on Nursing attended a meeting at the College of Nursing in order to gain information on a number of points connected with a nurse's life and training in hospital We were immediately attracted to each other, and our acquaintance ripened into a friendship which, although it had few opportunities for enjoyment, lasted until the present time On her appointment next year to represent the *Ministry of* Health on the General Nursing Council she took a keen interest in the education of nurses and became a member of its education committee She was an ardent supporter of the policy of the split preliminary state examination in order that nurses should be able to take the first part while still at school Although at first this policy was not accepted, she gave much time, thought and hard work to it, and it was a pleasure to her to see it adopted by the council at a later date She believed it to be a real advance in methods of nursing education In committees she combined a quiet persistence with a very gentle manner She was a charming hostess and many people will be the poorer by her loss

MEDICAL PROTECTION

Mr G F Stebbing writes Dr Kettle's death will be a serious loss to the medical profession *generally*, but I should like to say how much she will be missed by the council of the London and Counties Medical Protection Society When Sir Squire Sprigge was unable to be present at the council meetings Dr Kettle was appointed in his stead Her wide knowledge of medical affairs and her shrewd business sense were always available to the council and greatly appreciated by its members Her words were few but always to the point, and her friendly manner made even hostile criticism seem welcome We knew that we could rely upon her for any help that she could give at any time, and had learned that we need never have any hesitation in asking for such help even when it meant considerable trouble to her

SCHOOL GOVERNOR

Lord Stamp writes As chairman of the governors of Queenswood School, I speak of an important aspect of Dr Kettle's life of which little may be known in the professional circles in which she moved She entered Queenswood when nine years old and was there for some seven or eight years Miss Trew, the headmistress, records that she always showed ability far above the average and was soon at the top of every form into which she went, for she was keen, alert and had great powers of concentration She did not leave her mark on the examination roll because it was her parents' wish that she should not take exams After leaving school in France, Dr Kettle went to Johannesburg to keep house for her brother and was there seized with a desire to take up the medical profession, and she wrote to the headmistress for the matriculation syllabus and all the books She worked entirely on her own in South Africa and passed matric at her first attempt After *that she came home to study medicine, and others* will tell the story of her subsequent career Dr Kettle kept a vivid and practical interest in her old school and joined the governors in 1932 She was worthy of her place in any of many capacities First, as a representative of the most eminent of old scholars, with a knowledge of the school traditions and keen ambitions for its future Second, because of the unique place she had made for herself as a woman in public affairs Third, because of her personal qualities of sympathy, humour and practical interest in education All the circles in which she moved will miss her greatly, but none more than Queenswood

THE LANCET 100 YEARS AGO

May 11, 1839, p 282

From a leading article on a pamphlet by SIR ANDREW HALLIDAY

The following is an hypothesis in which Dr ADDISON *might have gloried* at the famous debate on malaria —"As regards the marsh poison itself and the question so often asked, What is it ? I can only, like others offer a conjecture, which is this I consider that, at particular seasons, or under peculiar influences, certain living *essences* are called into existence, which floating in the atmosphere, are swallowed in myriads, and dissolving in the stomach poison the vital fluids , that, in proportion *to* the ravages committed upon these *fluids we have the* phenomena of fever more or less developed "—The *essences* are called *invisible but active insects*, in the next page

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FINCHLEY'S NEW HEALTH CENTRE —Finchley borough council *s* centre in *Oak Lane was declared open* on May 6 by Mr R H Bernays, parliamentary secretary to the Ministry of Health The centre was designed by Mr P T Harrison, the borough engineer and architect, in consultation with Dr A A Turner, the medical officer of health, and cost £10,000 to erect The building is on two floors, the ground floor being allotted to maternity and child welfare and the first floor to school clinics On the ground floor is a large waiting hall leading to rooms for the infant welfare centre and antenatal clinic and a nursery for children under school age Above there is accommodation for the ophthalmic, artificial-sunlight and minor *ailments clinics for school-children and two dental surgeries* with recovery and rinsing rooms In his speech at the opening ceremony Mr Bernays remarked on the energy with which Finchley was tackling the difficult problem of public-health administration in a rapidly growing area In the new premises he said it would be possible to combine the facilities *for* mothers and young children with those for children of school age and it would be a great help in attaining continuity of supervision to have the responsibility for children of both age-groups in the hands of the same medical officers

MEDICAL NEWS

University of Cambridge

Particulars of an E G. Fearnsides scholarship for clinical research on the organic diseases of the nervous system will be found in our advertisement columns The scholarship is open to graduates and titular graduates of the university.

University of London

At a meeting of convocation held on May 9 Sir Ernest Graham-Little, F R C P., was re-elected to represent medicine on the senate At the same time Prof. M. Greenwood, F R C P, F R S, and Prof G B Jeffery, D.Sc, F R S, were re-elected to represent science. Prof Jeffery was elected deputy chairman of convocation

University of Dublin

Dr. C Heymans, professor of pharmacology in the University of Ghent, is to deliver two John Mallet Purser lectures at the school of physic, Trinity College On May 17 he will speak on the regulation of blood-pressure and vasomotor tone, and on May 18 on the rôle of the cardio-aortic and carotid sinus nerves in the reflex control of the respiratory centre.

University of Edinburgh

Mr. A. L Bacharach will give a lecture on vitamin E in the University New Buildings on Tuesday, June 6, at 5 P M. Graduates and students are invited to attend.

Royal College of Physicians of Edinburgh

A meeting of the college was held on May 2, with Dr. Alexander Goodall, the president, in the chair. Dr. John Gordon Kininmonth (Edinburgh) and Dr. Alexander Colin Patton Campbell (Edinburgh) were introduced and took their seats as fellows of the college Dr Sarandindu Mohan Ghosal (India), Dr Amulyaratan Chakravarti (India), Dr. Thomas Arthur Howard Munro (Colchester), and Dr. Hugh Adair Raeburn (London) were elected to the fellowship. The Freeland Barbour fellowship was awarded to Dr. Edith Dawson

The Morison lectures for 1939 will be delivered by Dr. Henry Yellowlees in the hall of the college on Thursday and Friday, June 8 and 9, at 5 P.M. His subject is the problem of adolescence.

Research in Tropical Medicine

The Medical Research Council issue the following information about fellowships :—

Up to three junior fellowships are offered immediately to medical men or women wishing to receive training for research in tropical medicine Preference will be given to candidates who have had experience of methods of research in some branch of medical science The fellowships will be tenable for three years, the first to be spent at a school of tropical medicine, the second at the same or some other institution at home, and the third at some centre in the tropics The stipend will be £300, £400, and £500 per annum in the successive years, with an additional allowance during service abroad, and necessary expenses

Senior fellowships—In three years' time at least one senior fellowship will be available for candidates who have held the junior fellowships This will be awarded for a further three years, with a stipend of £600–£750 per annum, and allowances. The council are also prepared to consider immediate applications for senior fellowships from candidates who have had adequate experience in research, whether already specially trained in tropical medicine or not

The council further intend to establish in due course permanent and pensionable appointments for research in tropical medicine, including senior posts. Members of this research staff will work partly in the tropics and partly in institutions at home Inquiries may be addressed to the secretary, Tropical Medical Research Committee, 38, Old Queen Street, London, S W.1, with whom applications should be lodged not later than June 19

Committee against Malnutrition

A public meeting will be held by this committee on Thursday evening, May 18, at 8 o'clock in the hall of the Royal Society of Arts, 18, John Street, Adelphi, London, W C 2, when there will be a discussion on the health and nutrition of the peoples of India Sir Cuthbert Sprawson will be in the chair and speakers will include Sir John Megaw, Dr. Margaret Balfour, Dr. Dagmar Wilson, and Prof. N. Gangulee, Ph.D. Tickets may be had from the [illegible]s of the committee, 19c, Eagle Street, W C.1.

St. John's College, Cambridge

Prof Ross Harrison, chairman of the National Research Council of the United States, will deliver the Linacre lecture in the lecture room of the anatomy school on Tuesday, May 16, at 5 P.M He will speak on the development of the internal ear — a study in experimental embryology.

London Jewish Hospital Medical Society

Sir Charles Wilson will deliver the annual oration to this society on Sunday, May 14, at 9 P M, when he will speak on humility The meeting will be held at 5, Addison Road, W.14.

West London Medico-Chirurgical Society

At 8 30 P M, on Thursday, June 8, at the Kensington Town Hall, Prof J B. S Haldane, F R S, will deliver the Cavendish lecture to this society. He will speak on congenital disease.

Royal Microscopical Society

On Wednesday, May 17, at 5 30 P M., at B.M A House, Tavistock Square, London, W.C 1, Mr F C Bawden will address this society on some properties of plant viruses

Silicosis Conference

The fourth Silicosis Symposium will be held from June 19 to 23 at the Saranac Laboratory, Saranac Lake, N.Y. The subjects for discussion will include disability, its causes and clinical evaluation, classical silicosis and reaction to mixed dusts. Further information may be had from Dr L U Gardner, director of the laboratory

Indian Medical Service

The annual dinner will be held at the Trocadero Restaurant, London, W 1, on Wednesday June 14, at 7 15 P.M, when Major-General C. W. F. Melville will preside Tickets may be had from Major Sir Thomas Carey Evans, the hon. secretary, Hammersmith Hospital, Ducane Road, W.12.

Left Book Club Medical Group

At a meeting of this group to be held at 101, Great Russell Street, London, W C 1, on Thursday, May 18, at 8 30 P M, Prof H Levy will give a talk entitled Science and Antisemitism The meetings of the group are open to medical men, pharmacists, nurses, and members of allied professions, and their friends

Dentists and National Service

A central emergency committee was set up some time ago to compile a register of all dentists who are ready to place their professional services at the Government's disposal in time of war, and local emergency committees on which all professional interests are represented have now been organised in the 40 districts covering the whole of England and Wales These local committees are helping the central body in its task of assessing national and local needs for dental service in the event of war, and insuring that all available personnel shall be used to the best advantage. The secretary of the dental emergency committee may be addressed at 13, Hill Street, London, W.1

Sanitary Problems in an Emergency

The evacuation of civilians in an emergency from certain areas is likely to raise problems of health in the billeting areas or in the special camps that may be set up to receive them To assist the health authorities of the reception areas the council of the Royal Sanitary Institute has arranged for a series of lectures and demonstrations to be given dealing with sanitary problems of evacuation of the civilian population The lecturers will be Major-General Sir Wilfred Beveridge, a former director of hygiene of the Army Medical Service, and Mr H H Clay, of the London School of Hygiene. The lectures will be given at the institute, 90, Buckingham Palace Road, London, S.W 1, from June 19 to 23. A visit will be made to the Army School of Hygiene at Aldershot. The course will be open to members and associates of the institute without fee.

Fellowship in Cancer Research

Applications are invited for a Pilkington fellowship n cancer research which is of the value of £300 and is enable for one year Further information may be had rom the registrar of the University of Manchester

London County Council

At a meeting of the council on May 9 it was decided o ask the Minister of Health to investigate certain statements affecting the administration of St Charles's Hospital n connexion with the deaths of 20 children

Medical Aspects of Delinquency

A week-end lecture course for doctors on this subject will be held at the Institute for the Scientific Treatment of Delinquency, 8, Portman Street London, W 1 on June 3 and 4 Further particulars will be found in our advertisement columns

Bristol's New Mental Hospital

On May 3, Sir Laurence Brock chairman of the Board of Control, opened the new mental institution which has been built by the city of Bristol at Barrow Gurney The hospital which is arranged on the villa system will, it is intended, ultimately house 1150 patients at present there is accommodation for 375 The early and acute stages of mental disease will be cared for in the admission and treatment centres, patients will afterwards pass on to the convalescent villas and later to the parole villas The gardens of the estate are well laid out, provision has been made for farm buildings, and there is a recreation ground The architect is Sir George Oatley who prepared the plans of the hospital in consultation with Dr Barton White and the Board of Control

Scottish Hospitals in War-time

The casualty hospitals in Scotland in the event of war will be organised in three groups The first group will be restricted largely to giving emergency treatment, the second will treat any casualties in their immediate vicinity and will also give continued treatment to cases transferred from the first group, and the third will deal with patients whose treatment does not require special facilities In addition to these hospitals, mansion houses in country districts will be used to provide auxiliary accommodation The Department of Health for Scotland which has been entrusted with the task of preparing and developing the necessary plans, has divided the country into five areas—western, south-eastern, eastern, north eastern, and northern—each under the charge of a hospital officer In an emergency, however, hospital authorities will retain full responsibility for the management of their hospitals, and will be expected to carry on the essential minimum of their normal work It is not proposed to abandon any hospital The maximum use is to be made of available accommodation by restricting admission to urgent cases, by erecting beds which hospitals normally maintain in reserve, by sending patients home, by introducing additional beds in the wards, by converting spare rooms into wards, by transferring patients from the first two groups to the third, and by erecting temporary buildings Hospital authorities are urged to maintain reserves of consumable stores and a minimum of at least a month's normal supply is mentioned

With regard to personnel, the aim will be to staff hospitals in the *most* dangerous areas on a "casualty" basis, the senior and more experienced consultants and specialists being assigned to the outlying hospitals Arrangements are being made for the organisation of surgical teams to serve hospitals some of the teams will be specially constituted to deal with certain types of injury—e g, head wounds—while others will be mobile, so as to be available at any point where exceptional pressure occurs A register of all medical men and women who would be available in an emergency is kept by the Scottish Central Emergency Committee and a similar register of trained and assistant nurses by the Scottish branch of the College of Nursing In war time each hospital authority will submit daily reports to the hospital officer, and in every period of raiding they will inform him every two hours of the bed state of the hospital and warn him whenever the balance of available beds threatens to become exhausted

British Postgraduate Medical School

On June 2 Mr Charles Donald will give the first of three weekly lectures on acute pyogenic infections He will speak at 2 30 P M in the department of surgery On June 7, 14 and 21 at 4 30 P M, in the department of pathology, Prof H W C Vines will lecture on the pathology of the adrenal glands Further information may be had from the dean of the school, Ducane Road, London, W 12

Nurses in War-time

At the College of Nursing on May 5 the Minister of Health outlined the Government's plans for meeting the need for additional nurses in war time By discharging patients or transferring them to other institutions, by crowding the beds, and by erecting temporary hutments and the like it is hoped to make 200,000 hospital beds available for casualties within twenty four hours and a further 100 000 within a week The construction of annexes is expected to provide another 50,000 beds Sufficient staff is available for only 200,000 beds, and nurses must be found for the other 150,000 The first step, Mr Elliot said, will be to make the most thorough use of existing personnel In order to minimise the demands made by military mobilisation the War Office has undertaken to mobilise only a proportion of the hospitals that exist in plan as part of the mobilisation scheme, and in return the existing hospitals will admit without distinction either civil or military casualties Secondly, there will have to be a considerable re location of staffs in accordance with the scheme whereby casualties will be treated not in the central hospitals of the great cities but further out Thirdly, the Central Emergency Committee for the Nursing Profession is compiling a register of the skilled, fully trained nurses not at present employed in hospitals or other institutions, and is arranging for the recruitment of thousands of auxiliaries This register will be the more necessary, said the Minister, because the need for nursing personnel does not by any means end with the staffing of the hospitals There will also be some 3000 first-aid posts, and the ordinary peace time services would have to be kept going being especially required in areas where the population is increased under evacuation schemes Some 15 000 trained nurses are known to have retired from active practice but it is estimated that at least 100,000 auxiliaries will be needed

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Medical Diary

May 15 to May 21

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole Street, W 1

TUESDAY—5 P M, *meeting of fellows*

WEDNESDAY

Surgery 8 30 P M, annual general meeting Mr Claude Frankau The Problems of Surgery in Old Age (presidential address)

THURSDAY

Dermatology 4 P M, Dr F Parkes Weber (1) Rendu Osler Type of Telangiectatic Dysplasia and De Morgan's Spots (2) Progressive Diffuse more or less Symmetrical Telangiectatic Dysplasia Dr H Semon and Dr F Herrmann (3-6) Acne Vulgaris Dr Mitchell Heggs (7-8) Arborescent Telangiectasis Treated with Grenz ray Dr C H Whittle (9) Lesion on Lip 5 P M, annual *general meeting*

Neurology 8 P M, slides and specimens 8 30 P M, annual general meeting

FRIDAY

Obstetrics and Gynæcology 8 P M annual general meeting Mr Albert Davis Diagnostic Value of Hysterography in Gynæcology Prof F J Browne Danger of Willett's Forceps in *Placenta Prævia* Mr G I Gibberd Factors Influencing the Attitude of the Fœtus in Utero Mr J H Peel Persistent Menstruation until the Age of 71 Effects of Stilbœstrol on Labour Mr J St George Wilson film of the Liverpool Quadruplets colour film of the Operation of Sturmdorf's Amputation of the Cervix with the *Diathermy* Cautery *Prof Browne Full-time* Ectopic Pregnancy (girl now aged 12)

Radiology 8 P M, annual general meeting

SATURDAY

Psychiatry 2 30 P M clinical meeting at St Ebba's Hospital Epsom Surrey

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place W 1

THURSDAY—8 15 P M Dr H M O Lester (Nigeria) Trypanosomiasis in some African Dependencies

TUBERCULOSIS ASSOCIATION
Friday—5 10 P M (26, Portland Place, W 1), Dr. J G Scadding and Dr G. Ivor Davies Diagnosis of Pulmonary Tuberculosis in the Absence of Bacteriological Confirmation—Clinical and Administrative Difficulties 8 10 P M, Dr T W Davies Silicosis in Slate-quarry Miners

CHELSEA CLINICAL SOCIETY
Tuesday—8 30 P M (Rembrandt Hotel, Thurloe Place, S W 7), Mr G N M Tyrrell. The Scientific Aspect of Psychical Research

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY, Royal Northern Hospital, Holloway Road, N 7
Wednesday—9 P M, Sir Alexander Maxwell: Treatment of Crime

HEBERDEN SOCIETY.
Tuesday—8 30 P M (11, Chandos Street, W.1), Dr Ernest Fletcher: Osteo-arthritis and its Association with Obesity and Hypertension (Heberden lecture).

EUGENICS SOCIETY
Tuesday—5 15 P M (rooms of the Royal Society, Burlington House, Piccadilly, W 1), Prof A M Carr-Saunders: Some Problems of Population

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S W 1
Thursday—5 P M, Prof J. A Ryle: Visceral Neuroses (First Croonian lecture)

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH
Monday—5 P M, Lord Horder: The Control of Disease. (Frederick Price lecture)

ROYAL SOCIETY OF ARTS, John Street, Adelphi, W C 2
Monday—8 P M, Prof E C Dodds Modern Chemistry, Modern Medicine, and Modern Food (Second Cantor lecture)

TAVISTOCK CLINIC, Malet Place, W C 1
Monday—6 P M, Dr Emanuel Miller Theories of Instinct (II)
Wednesday—3 P M, Dr Cedric Shaw: Cardiovascular Syndromes 4 30 P M, Dr H Crichton-Miller. Hysteria
Thursday—6 P M, Dr Grace Calver. *Methods of Diagnosis* and Therapy

INSTITUTE OF PSYCHO-ANALYSIS, 96, Gloucester Place, W 1
Tuesday—8 30 P M, Dr E Bibring· Domination and Subordination

CHARTERHOUSE RHEUMATISM CLINIC, 56, Weymouth Street, W 1
Wednesday—8 30 P M, Mr J S Ryan and Dr Raymond Greene. Endocrine Aspect of Rheumatism Dr H Warren Crowe film on Postural Exercises Dr S Gilbert Scott· film on Spondylitis

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12
Monday—4 30 P M, Dr R C Wingfield Pulmonary Tuberculosis
Wednesday—Noon, clinical and pathological conference (medical) 2 P M, Prof J H Dible The General Pathology of Syphilis 3 P M, clinical and pathological conference (surgical) 4 30 P M, Prof A. A Miles The Isolation of Bacterial Antigens
Thursday—2 15 P M, Dr Duncan White radiological demonstration 3 30 P M, Mr Victor Bonney. Benign Uterine Neoplasms
Friday—2 P M, clinical and pathological conference (obstetrics and gynæcology) 2 30 P M, Mr Cecil Joll. Toxic Goitre
Daily, 10 A M to 4 P M, medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations

ST MARY'S HOSPITAL, W 2
Tuesday—5 P M (institute of pathology and research), Mr A S Parkes, F R S The Hormones of the Anterior Pituitary Body

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W C 1
Thursday—2 P M, Dr Ruby Stern Virus Infections of the Central Nervous System in Children 3 P M, Mr H C Apperly The Milk Teeth
Outpatient clinics daily at 10 A M and ward visits at 2 P M.

ST GEORGE'S HOSPITAL, S W 1
Thursday—5 P M, Dr W Mayer-Gross. psychiatric demonstration

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W C 2
Monday—5 P M, Dr J A Drake Dermatological Neuroses
Tuesday—5 P M, Dr J E M. Wigley: Napkin-area Eruptions
Wednesday—5 P M, Dr I Muende pathological demonstration
Friday—5 P M, Dr R T Brain. Physiotherapy

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W 1
Monday to Sunday—St Peter's Hospital, Henrietta Street, W C 2, all-day course in urology—St John's Hospital, 5, Lisle Street, W C 2, afternoon courses in dermatology. (Open to non-members)—Brompton Hospital, S.W 3, Tues and Fri, 5 15 P M, M R C P course in chest diseases—St John Clinic and Institute of Physical Medicine, Ranelagh Road, S W 1, Sat and Sun, course in physical medicine

MANCHESTER ROYAL INFIRMARY
[illegible]ay—4 15 P M, Dr D M. Sutherland: demonstration [illegible] surgical cases

Appointments

Browne, James, M B Belf, junior assistant medical offi[illegible] Botleys Park Colony, Chertsey
Clark, J F, L R C P E, assistant resident medical o[illegible] at Holgate Municipal Hospital, Middlesbrough
Dunscombe, N D, M B Camb, D P H, barrister-at-[illegible] medical officer of health for the Stroud urban and ru[illegible] districts and Nailsworth urban district
Gill, A M, M D Lond, M R C P, assistant physician to [illegible] West London Hospital
Hallett, C V, M B Melb, assistant medical officer (class II) at St Pancras Hospital (L C C)
Hart, A Tudor, M R C S, assistant county medical office[illegible] health (A R P) for Kent
Harwood, H F, M B Lpool, resident assistant medical o[illegible] Clatterbridge Isolation Hospital
Heasman, H. W, M R C S, assistant district medical officer [illegible] L C C area IV, district D (part St Marylebone and pa[illegible] Paddington)
Kidson, C W, M B Birm, assistant school medical officer [illegible] Huddersfield
McLaren, J W, M R C S, D M R E, senior radiologist [illegible] St Thomas's Hospital, London
Marshall, James, M B Glasg, D P H, assistant cou[illegible] medical officer of health for Kent
Meller, H K, M B Camb, M R C P, outpatient me[illegible] registrar at the Hospital for Sick Children, Great Or[illegible] Street, London
Orley, Alexander, M D Geneva, M R C S, D M.R E, [illegible] radiologist to the Paddington Green Children's Ho[illegible] London.
Pulvertaft, C N, M B Camb, D M R E, senior ass[illegible] radiologist at the Royal Cancer Hospital (Free), London
Redman, Thirza, Ph D Lond, M B Lpool, D P H, path[illegible]logist and research fellow in pathology at the Chris[illegible] Hospital and Holt Radium Institute, Manchester
Rees-Jones, G F, M R C S, chief clinical assistant in [illegible] X-ray (diagnostic) department of the West Lon[illegible] Hospital
Richards, Florence G, M R C S, D R C O G, outpat[illegible] medical registrar at the Hospital for Sick Children, Gre[illegible] Ormond Street, London
Roberts, F W, M B Lond, D A, hon anæsthetist to t[illegible] Middlesex Hospital, London
Seiler, H E, M D Glasg, D P H, deputy medical officer [illegible] health for Edinburgh
Sparks, J V, M R C S, D M R E, part-time radiologist at t[illegible] Royal Cancer Hospital (Free), London
Todd, J W, M B Lond, M R C P, resident medical officer [illegible] the Middlesex Hospital, London
Tomlin, E H, M B Leeds, D P H, assistant medical offic[illegible] health for Plymouth
Wallace, H J, M B Camb, M R C P, hon physician to t[illegible] skin department of the Paddington Green Childr[illegible] Hospital, London
Wheatley, J N, L M S S A, assistant medical officer (A.R.P[illegible] for Hornsey
Wiseman, J F S, M B Edin, medical officer at Com[illegible] Works Dispensary, Smethwick

Colonial Service—*The following appointments* are announced[illegible]
Grove-White, R J, M B Dubl, medical officer, Malaya
Macbeth, R I, M R C S, medical officer, Malaya,
Mackay, R, M D Aberd, D P H, specialist, medical department, Tanganyika Territory, and
Rostant, C F, M B Edin, medical officer, district serv[illegible] Trinidad

Vacancies

For further information refer to the advertisement colum[illegible]

Basingstoke, Hants, Park Prewett Mental Hosp—Jun asst M[illegible] £350
Bermondsey Borough—Asst M O, £600
Birmingham, Canwell Hall Babies' Hosp—Res M O, at rate [illegible] £250
Blackburn County Borough—Asst M O H, £600 Also [illegible] asst M O at Queen's Park Hosp, &c, £200
Bolton Royal Infirmary—H P, at rate of £200 Also [illegible] H S's each at rate of £150
Brighton, Royal Sussex County Hosp—H P and cas [illegible] at rate of £150 and £120 respectively
Brighton, Sussex Eye Hosp, Eastern Road—H S, at rate of [illegible]
Bristol, Walker Dunbar Private Hosp, &c, Clifton—Vac[illegible] on hon med staff
Bristol University—Part-time medical officers
Cambridge University—E G Fearnsides scholarship for c[illegible] research &c
Canterbury, Kent and Canterbury Hosp.—H P, at rate of £1[illegible]
Central London Throat, Nose and Ear Hosp, Gray's Inn [illegible] *W C 1*—Hon second asst
Chelsea Hosp for Women, Arthur Street, S W 3—Jun [illegible] (Male), £100 Also medical officer for convalescent [illegible] St Leonard's-on-Sea
Chesterfield and North Derbyshire Royal Hosp—H S to [illegible] and ear, nose and throat dept, at rate of £1[illegible] H S and asst cas O, at rate of £150
Colchester, Essex County Hosp—H P, £150
Colchester, Royal Eastern Counties' Institution, &c—Asst [illegible] £400
Derby, Derbyshire Royal Infirmary—H S for general [illegible] £150

na Hosp for Sick Children Southwark, S E 1—H P, at rate of £120

bury Metropolitan Borough, E C 1—Temp tuberculosis officer, £50 per month

ney Borough Council—Consultant gynæcologist (part-time), 2½ guineas each attendance

fax Royal Infirmary.—First H S at rate of £200

pstead General Hosp, Haverstock Hill, N W 3—Res cas surg O for outpatient dept at rate of £100

ford County Hosp—Hon consulting physio therapeutist to dept of physical medicine Also H S at rate of £200

for Sick Children, Great Ormond Street, W C 1—Res med asst and clin pathologist £125 Also two H P 's and H S each at rate of £50

Beverley Road Institution—Asst M O, £350

Royal Infirmary—Second H P at rate of £150

s Jewish Hosp—Res M O

on County Council—Asst M O 's £170 Asst M O (class I), £350 Also asst M O s (class II), each £350

on Hosp, E 1—Clin asst in X ray dept, £100 Also anæsthetist to dental dept £25

stone, Kent County Ophthalmic and Aural Hosp—H S to ophthalmic dept and H S to ear nose and throat dept each at rate of £200

chester, Crumpsall Hosp—Res asst M O at rate of £200

chester, Park Hosp, Davyhulme—Asst res M O to special depts, at rate of £300

chester, Victoria Memorial Jewish Hosp, Cheetham—Jun H S and cas O, at rate of £125

chester Royal Infirmary—H S to special depts at rate of £50 Also hon radiologist

opolitan Hosp, Kingsland Road E 8—Cas O and res anæsthetist, £100

ddlesex County Council—Various appointments £1000 per annum to 3 guineas per session

ord Surrey County Sanatorium—Jun asst res M O at rate of £250

r General Hosp Greenwich Road, S E 10—Two cas O 's, each at rate of £150 Also H P and H S, each at rate of £100

stry of Agriculture and Fisheries Foot and mouth disease research committee.—Scientific superintendent £1000

port County Borough.—Asst M O H, £600

hampton St Andrew's Hosp—First asst M O £625

ingham, Children s Hosp—Res H S, at rate of £150

ingham General Hosp—Res anæsthetist at rate of £150

rd Warneford Hosp for Mental Disorders—Locum tenens, 7 guineas per week

rd University—Research student in dept of clinical medicine, £300

nouth Prince of Wales s Hosp Greenbank Road—H S, at rate of £120

smouth Royal Hosp—Sen H S, at rate of £175

cess Beatrice Hosp, Earls Court, S W 5—Res surg O, at rate of £200

cess Louise Kensington Hosp for Children St Quintin Avenue, W 10.—Clin asst for outpatient dept Also hon asst physician

on Service (England and Wales)—M O (class II), £325

n Charlotte's Maternity Hosp Marylebone Road N W 1—Obstetric surgeon to inpatients

n Mary s Hosp for the East End, Stratford E 15—Outpatient officer, at rate of £150 H P and two H S 's each at rate of £120 Also obstet H S, at rate of £110–£130

ling, Battle Hosp—Res asst M O £300

ling, Royal Berkshire Hosp—Hon obstetrician and gynæcologist Hon asst obstetrician and gynæcologist Also asst to pathologist, £350

l Air Force—Commissions

al Cancer Hosp Fulham Road S W 3—Surg reg, £150 Also H S at rate of £100

l College of Surgeons of England—Member of the Court of Examiners

al Free Hosp, Gray s Inn Road W C 1—Res cas O at rate of £150 Inpatient obstetric assistant Also third H P

l Naval Medical Service—M O s

l Naval Volunteer Supplementary Reserve Medical Section.—M O s

e, Royal Isle of Wight County Hosp—H P £130

Bartholomew's Hosp Medical College, E C 1—Lecturer in public health Also lecturer on forensic medicine

Helens County Borough—Temporary A M O £500

Mary s Hosp W 2—Hon medical officer for electro therapeutic dept

Paul s Hosp for Urological and Skin Diseases, Endell Street W C 2—H S, at rate of £100

t Pancras Dispensary 39 *Oakley Square, N W* 1—Hon physician

aritan Free Hosp for Women Marylebone Road N W 1.—Pathologist, at rate of £250

field Royal Infirmary—Two surgical first assts and clin asst to dermatological dept each £300 Also sen cas O at rate of £150

thampton Free Eye Hosp—H S, at rate of £150

thend-on Sea General Hosp—H P, H S, and cas O, each at rate of £100

e-on Trent, North Staffordshire Royal Infirmary—Hon asst surgeon

bridge Corbett Hosp—H P and H S at rate of £125 and £100 respectively

ro Royal Cornwall Infirmary—Jun H S £120

versity of London King's College, W C 2—Lecturer in physiology £350

all General Hosp—H S at rate of £150

ington Hosp New Zealand—Surgical registrar, £300

mbley Borough—Deputy M O H £700

West End Hosp for Nervous Diseases Gloucester Gate, Regent's Park, N W 1—Hon asst surgeon. Hon psychotherapists Also hon clin assts

Winchester, Royal Hampshire County Hosp—H S, at rate of £100

Windsor, King Edward VII Hosp—Cas O £120

Woolwich and District War Memorial Hosp, Shooters Hill, S E 18—Surg reg, £100

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Pontardawe (Glamorgan) Roade (Northampton), and Newtyle (Angus)

Medical Referee under the Workmen s Compensation Act, 1925, for the Newark and Nottingham County Court Districts (Circuit No 18) and for the Haverfordwest, Pembroke Dock and Narberth County Court Districts (Circuit No 31) Applications should be addressed to the Private Secretary, Home Office, Whitehall, S W 1 before May 30 and June 3 respectively

Births, Marriages and Deaths

BIRTHS

BASSETT—On May 7, at Cheniston Gardens, W 8, the wife of Dr J M Bassett—a son

BRIGGS—On May 6, at Highgate, the wife of Dr David Briggs—a daughter

FELLS—On May 1 at Clifton Bristol the wife of Dr Roy R Fells—a daughter

HANCOCK—On May 7 at Bentinck Street, W 1, the wife of Dr P E Thompson Hancock—a daughter

NOEL HUMPHREYS—On May 7, at Portsmouth, the wife of Dr G Noel Humphreys—a son

PHILLIPS—On May 3 at Welbeck Street W 1 the wife of Dr E S Phillips, Hemel Hempstead—a daughter

WILLIAMSON—On May 6, the wife of Mr James C F Lloyd Williamson F R C S of Hove—a daughter

WILSON—On May 6, at Summer Court, Cornwall, the wife of Dr C M Wilson—a son

DEATHS

ANLEY—On April 23, at Shanklin, Surgeon Captain Frederick Eustace Anley, M R C S, R N (retd)

BAIN—On May 4 at Catford, Lawrence Weir Bain, M C, M B Aberd, barrister at law, aged 48

EVANS—On May 7, at Edgbaston, Birmingham, Thomas David Fabian Evans M B, C M Edin, M R C S, in his 88th year

GORDON—On May 2, Sydney George Gordon, L R C P I D P H, Nottingham

GORDON SMITH—On May 6 at Knightwick Worcester, Harry Gordon-Smith, M B Camb D P H

GRIFFITHS—On May 6, Sidney Harold Griffiths M D Durh M R C S, D P H, of Brighton

HOLDEN—On May 5, at Reading, George Herbert Rose Holden M D Camb, Knight of grace of the Order of St John of Jerusalem

KELLY—On May 7, at Hurstpierpoint, Francis Harry Kelly, M B Lond

KENNEDY—On May 5 F W Kennedy, M D Dubl late of Limerick, in his 75th year

KETTLE—On May 4, Marguerite Henrietta Kettle, M R C S

MCCAUSLAND—On May 4 at Swanage Dorset, Albert Stanley McCausland, M D Brux M R C S

THOMAS—On May 5 Percy Dewhurst Thomas, L M S S A

TWINING—On May 7, at Manchester, Edward Wing Twining, M R C P, F F R, D M R E, aged 61

N B—A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

FLORENCE NIGHTINGALE HOSPITAL FOR GENTLEWOMEN—On April 20 Mr R M Handfield-Jones secretary to the medical committee, took the chair at the annual general meeting of this hospital, which is maintained for the medical and surgical treatment of the wives, daughters and near relatives of professional men with limited means, who cannot afford a nursing home and who do not want to go to a general hospital There are 38 beds and the patients are attended by physicians and surgeons from the staffs of London hospitals Miss Lilian Faithfull spoke of the work which women had been inspired to do by Florence Nightingale who herself founded the "Establishment for Gentlewomen during illness, as it was then known The hospital may be addressed at 19, Lisson Grove, London, N W 1.

NOTES, COMMENTS, AND ABSTRACTS

HIGH AND LOW ENEMAS

By O. A. Marxer
RADIOGRAPHER, RUTHIN CASTLE CLINIC, NORTH WALES; AND
S. W. Patterson, D.Sc Lond., M D. Melb., F R.C.P.
PHYSICIAN AND BACTERIOLOGIST TO THE CLINIC

"High enema, an injection into the colon"—Gould's Medical Dictionary, 1935.

"High enema, an enema thrown up into the colon"—Stedman's Medical Dictionary, 1936

The standard technique of giving a barium enema used by all radiologists, whose object is to obtain quickly and completely a picture of the whole colon in its natural state with the least disturbance of the patient, is to introduce the rubber tube two or three inches into the rectum and to allow the contrast suspension to run in by gravity from a height of not more than two feet Fluid thus injected into the rectum generally reaches the cæcum in less than ten minutes If the injection is too rapid or spasm of the bowel occurs, it is sufficient to retard the flow and to get the patient to take a few deep breaths (Marxer 1923). The capacity of the normal colon in the morning is about 30 oz., when the fluid is run in under low pressure If too large an amount is used, the bowel may be distended and elongated (Spriggs 1931). With the above routine consistent filling of the colon is obtained. Nevertheless the teaching in nursing and medical textbooks on the methods of giving enemas and colonic irrigations is so diverse and discrepant, that a restatement of the facts is advisable.

HISTORY

The position at the end of last century is represented by Burney Yeo's (1895) direction to "administer an enema by a long tube, unless the buttocks are raised or a very long tube is used, it will be found that the enema is often immediately rejected and does not get beyond the rectum." Lauder Brunton (1893) said a flexible soft rubber tube should be passed for eight or ten inches up the intestine. By this method the fluid is introduced into the sigmoid flexure or descending colon; and, if the patient can be propped somewhat so as to lie on his left side, none of it may descend into the rectum, and there will be little or no tendency to evacuate it.

Combe of Lausanne was a leading advocate of the treatment of intestinal auto-intoxication by irrigation of the colon. In his book (1907) he says: "To make a good lavage of the intestine, it is necessary to carry the liquid to the cæcum, but without distending or irritating the intestine. This cannot be done with the ordinary rectal douche with short nozzle and strong pressure We use English catheters of small calibre (16 to 24 French scale) 50 cm long for children and one metre or more for adults By introducing the catheter a few centimetres at a time its whole length can be easily introduced and the water carried to the cæcum without causing the patient the slightest pain or discomfort, the quantity used varying from 500–1500 c cm." This appears in the English translation of Combe's book (1908) and is repeated word for word in Combe's book on the treatment of mucomembranous colitis (1918) Humphry's "Manual of Nursing" (1907) advocated the same method, "a long rectal tube passed further and further"; though "it is not always easy to [illegible] and when it seems to be travelling on it really may be coiling upon itself" Combe's teaching has been widely followed.

Hurst (1909), however, stated that his X-ray observations had shown that fluid introduced through an india-rubber tube into the intestine reached the cæcum without difficulty. "It is generally useless to introduce the tube more than three or four inches, as X-ray observations show that when it reaches the pelvirectal flexure its end turns backwards towards the anus, from which it may finally project. Occasionally a hard india-rubber tube may be pushed into the pelvic colon, but it is dangerous to exert much force; if no other means succeed, the tube may be introduced into the pelvic colon through a sigmoidoscope. If between one and a half and three pints of water are introduced into the colon in this way, the whole of it is slightly distended". This Hurst calls a "high" enema, in contradistinction to a "low" enema administered in "the ordinary way with Higginson syringe, by which the rectum and pelvic colon are so quickly stimulated to contract that it is generally difficult to inject more than a pint of fluid and not much of this gets beyond the pelvic colon." In spite of this clear teaching, which Hurst repeated in 1921, with a skiagram which "shows how the tube invariably turns back when it reaches the pelvirectal flexure, the acute angle formed by the junction of the movable pelvic colon with the fixed rectum, and then coils round the rectum," and again in 1935, many writers continue to give misleading directions

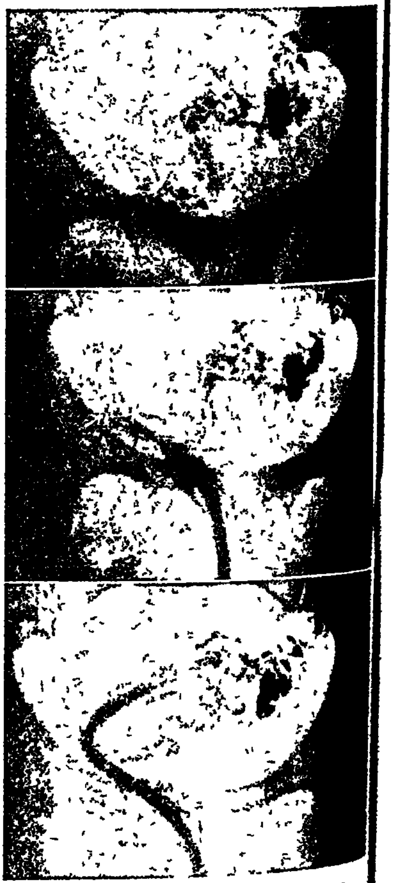

Fig 1—Radiograms of rectum and sigmoid colon (A) Serial picture showing sigmoid folded over rectum, (B) rubber tube inserted until resistance is felt at rectosigmoid flexure (arrow), (C) sigmoid unfolded beyond rectosigmoid flexure by the comparative rigidity of the rubber tube.

Herschell and Abrahams (1914) recommend that the end of the tube should pass four inches into the rectum, but they quote in full Combe's directions given above and then state that Kemp, of New York, no longer uses a colon tube but a rectal irrigator, for one can wash the bowel as thoroughly with the five inch tube by this method as with the colon tube "The adult rectum averages 8 inches in length and the adult sigmoid 17½ inches The mesentery of the sigmoid is often very long, allowing that viscus to be readily pushed up Thus to enter the descending colon where it joins the sigmoid flexure a rectal tube 28 to 30 inches long is necessary" Maxwell and Pope (1914) state that the enema tube should be inserted "eight or nine inches", Gullan (1920) "ten to twenty inches so that the injection may enter the colon", Cook (1912) and Harmer (1922) about six inches, Perry and Harvey (1932) six to ten inches, Stewart and Cuff (1911) six to eight inches, Krusen (1936) four to six inches Hey Groves and Fortescue Brickdale (1916) say "the tube should be inserted by means of a gloved finger as far as possible up the rectum", Hassard and Hassard (1927) "the catheter should be inserted gently and pushed on till only two or three inches of it are visible", and Sanders (1922) says four to eight inches for a low enema, but with a high enema "the object is to reach as far up the colon as possible, more than eight inches Frequently the tube is found to have coiled, but once past the sigmoid flexure the tube should be pushed forward as long as it meets no resistance" Wiltsie (1931) advocates passing a 52 inch tube through the colon 'directly into the cæcum, which is successful in at least 95 per cent of the cases" On the other hand, Ashdown (1929), Stewart (1931), Russell (1932), Bastedo (1932), Spriggs (1934), Friedenwald and Morrison (1935), Patterson (1937), and a standard French manual for hospital nurses (1914) all state that the tube should be *introduced for two to four inches,* and that it is useless to insert it further

PRESENT OBSERVATIONS

A series of twenty patients was observed during the routine of giving a barium enema, and the position of the tube and filling noted in the early stages, when the colon was filled, and after emptying In these cases attempts were made to pass the tube into the sigmoid flexure

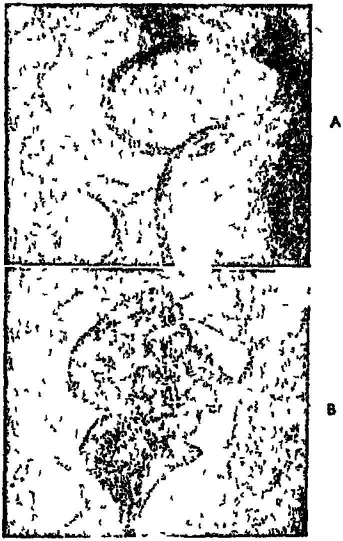

FIG 3—Radiograms showing that, even with the enema tube in the sigmoid colon, filling takes place from below upwards (A) Tube in sigmoid colon, (B) the same after injection of opaque enema, arrow showing site of tip of tube in colon, and cross marking recto-sigmoid flexure

In the normal empty state the sigmoid colon is huddled up in the pelvis, over the contracted and shrunken rectum Radiologically, the empty rectum shows (longitudinal) plication which terminates abruptly above the rectosigmoid junction Fig 1 shows (a) a serial picture of the rectum and sigmoid, the latter being folded over the rectum, (b) the rubber tube inserted until resistance is felt at the rectosigmoid junction, (c) the sigmoid unfolded beyond the rectosigmoid flexure by the comparative rigidity of the tube For these observations the rectal tube has been pushed on gently until resistance was felt It reached the sigmoid in six of the twenty cases, in the other fourteen the tube curled up in the rectum (fig 2) The possibility that a dilated rectum may allow the tube to glide into the sigmoid more readily was not borne out, the air distended rectum shows the tube curled up nevertheless Fig 3 demonstrates that, even if the tube is successfully made to enter the sigmoid

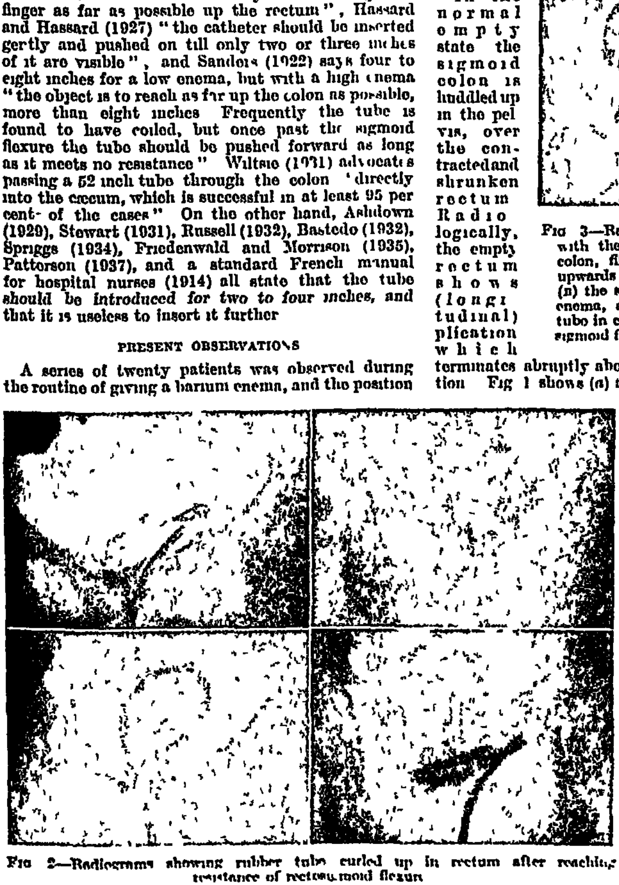

FIG 2—Radiograms showing rubber tube curled up in rectum after reaching resistance of rectosigmoid flexure

the filling is still downwards before upwards; the rectum is filled first, and afterwards the fluid finds its way into the descending colon.

CONCLUSIONS

The terms "high" and "low" as applied to enemas have nothing to do with the distance the rectal tube is inserted, but only with whether the fluid is injected gently, so that it may percolate into the upper colon, or violently, so that it is rejected by the rectum and pelvic colon before it can pass further. The terms are confusing, especially to nurses and the laity, and should be abandoned.

The rectal tube should not be inserted more than four inches. If inserted further it either curled up in the rectum, or, in the minority of cases in which it reached the pelvic colon, the rectum was always filled before the fluid passed into the colon.

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NARCOTIC ABUSE IN EGYPT

IN his report for 1938 Russell Pasha[1] (now Sir Thomas Russell), director of the Central Narcotics Intelligence Bureau of Egypt, while recording continued progress in countering illicit traffic in dangerous drugs, expresses apprehension lest any relaxation in the efforts of the last ten years may lead to a drifting back to the previous widespread addiction to narcotics. The report, as usual, is heavily documented and bristles with statistics Cases of seizures of narcotics on or before arrival from abroad as well as those made in the interior of the country are set out in detail, accompanied by illustrations showing the elaborate, but misapplied, ingenuity by which the contraband drugs are concealed. The capitulations have now been abolished and foreign subjects are now tried in Egyptian courts under the new narcotic law. Of 2592 charged with offences during 1938, 2088 were convicted. The most significant figure in the seizure tables is the large and growing amount of opium that was confiscated—viz, 1037 kg. against 247 kg. in 1935. Opium is largely supplanting heroin and is now the favourite narcotic. Until recently it was taken by chewing, as in India, but the new vogue of administration is by hypodermic injection of a decoction of the drug. The magnitude of this innovation is disclosed by the fact that some 49,500 hypodermic syringes were purchased last year by the non-professional public. Out of a total of some 15,000 addicts 6000–7000 employed hashish, 5000 opium, 2600 heroin and 13 cocaine. Of 1476 traffickers reported to the Narcotics Bureau in 1938 no fewer than 1412 were natives of Egypt, 17 were French, 15 Greek, 15 British, 11 Italian, and 5 Chinese.

Of the contraband opium entering Egypt three quarters comes from the Suez Canal front, either through the canal ports, thrown over in canal transit, or smuggled from Palestine through Sinai. Russell Pasha again urges the need for more preventive police for Suez, provided with motor launches. Unfortunately the Narcotics Bureau and the Cairo city police have, under the new treaty, lost half of their expert European officers and constables, and in two years' time the anti-narcotic defence of Egypt will be entirely staffed by native police. Unless some of the European head constables are re-engaged the director fears that many of the hundreds of deported foreign traffickers known to the police will re enter the country unrecognised by the native detectives. The Pasha warns his government of the perils of a policy of stinting in personnel or equipment the efficient force which he has gathered and instructed.

PAPAVERINE AND THE INTESTINE

MORPHIA is liable to increase rather than decrease the muscular tone of both the large and small intestine, and I. A Bargen and R J. Jackman of the Mayo Clinic observe that regions of contracted bowel, obstructive in nature, alternating with stretches of distended bowel are found alike in the toxæmia of peritonitis and after the administration of morphia (*Surg. Gynec. Obstet.* April, 1929, p. 479). Since the drug is commonly used to relieve pain and postoperative discomfort after gastro-intestinal operations they have tried to find a better drug for this purpose Having investigated certain other alkaloids of opium they conclude that papaverine hydrochloride in dosage of 1–1½ grains has all the analgesic advantages of morphia without its drawbacks. This drug alone or, better, in combination with atropine and Pantopon (papaveretum B P.C) was found to be of great value in relieving the abdominal cramps and foul discharges of ulcerative colitis.

TEMPORA MUTANTUR

Dr. O. P. CLARK writes: There must be many readers who, like myself, look back nearly a quarter of a century now to the days of our military service, following, in many cases, all too rapidly on an interrupted 'varsity or even school career. As one who in his day rather "went through the mill" I have all the time a sneaking sympathy for the various young recruits in territorial units who come up to see me in course of ordinary panel practice. But perhaps my sympathy is misplaced, for a note brought to me the other day by a young man who came to have his ears syringed read as follows: "Will you please *arrange to have your ears syringed by your next drill* night (Monday) so that the Medical Officer might re-examine them. Please report to Sgt. —— on your arrival in the Drill Hall." Will you *please* arrange . . . *Please* report. Shades of Salisbury Plain! Wraiths of Wimereux! Ghosts of Gommecourt! O Tempora! O Mores! Nevertheless I am still keeping venesection equipment in readiness in my emergency bag with the special idea of dealing rapidly and efficiently with casualties among sergeant-majors. And who knows whether I shall need it one day?

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[1] Annual Report for 1938 of the Central Narcotics Intelligence to the Egyptian Government, Cairo Government Bulâq, 1939

ADDRESSES AND ORIGINAL ARTICLES

INSULIN AND CARDIAZOL TREATMENT OF SCHIZOPHRENIA*

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and
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(From the Budapest Angyalföld Mental Hospital)

The convulsion therapy of schizophrenia was inaugurated by one of us (L. M.) on the theoretical assumption of a biological antagonism between schizophrenia and epilepsy. This hypothesis proved fruitful so far as practical results went, as was shown by the number of remissions after convulsion treatment corroborated by the majority of subsequent workers. These, however, were nearly unanimous in rejecting the theoretical foundation of the treatment. Their criticism seems to be justified as much by the results of convulsion therapy in non-schizophrenic conditions, especially melancholia, as by the efficiency of other methods, such as hyperthermia and prolonged narcosis in schizophrenia. Especially difficult to interpret in terms of biological antagonism are cases reacting well to cardiazol though not to insulin, and vice versa. This treatment was described by one of us (L. M.) as the "crossed therapeutic method" and was referred to by him when he said, in Munsingen, at the 1937 congress: "I hope that these crossed forms will in the future enable us to desist from the present drastic methods. Instead of the shock and the coma of the insulin therapy, and the convulsions of the cardiazol treatment, we shall be able to apply directly the slow chemical processes now only elicited in the organism by insulin and cardiazol." On the basis of these considerations we have made it our task to initiate comparative investigations regarding the biochemical foundations of the insulin and cardiazol treatments, and to utilise the results of these investigations to find further and more effective therapeutic methods.

In studying the action of both insulin and cardiazol, one is first struck by the fact that both methods lead to remissions in a considerable number of cases, chiefly in relatively early cases. In cases of long duration the probability of success rapidly decreases. The explanation of this decrease in the tendency to improve may be that the cerebral changes caused by schizophrenia have become irreversible in chronic cases. This supposition, however, has been rendered rather improbable by histopathological findings. According to all authors on the subject, including Josephy, Fünfgeld, Miskolczy, and Horányi, there is no correlation between the duration of the schizophrenia and the histopathological changes. More probable is the theory that schizophrenia is a functional disturbance of the brain caused by the primary affection of some other organ or system. In any case, both the difficulty of influencing chronic cases and the relative ease with which lasting remissions can be attained in fresh cases support the idea, first suggested by Prof. Maier of Zürich, that neither insulin nor cardiazol has any direct therapeutic effect; they merely stimulate the patient's tendency to improvement. In other words the therapeutic effect is due in both cases to secondary biochemical reactions elicited by the drugs and not to their direct action. If the latter were the case, the simple procedure of increasing the dose would invariably lead to a remission, and stopping the administration of the drugs to a relapse. The situation is analogous to the *Wasserstoss* (water shock) therapy in acute uræmia. Nephritic uræmia, like schizophrenia, when untreated usually becomes chronic; sometimes there are spontaneous cures, but there are also some fatal cases. The *Wasserstoss* therapy of nephritis is very effective in acute cases, whereas it is ineffective in chronic cases. Volhard's *Wasserstoss* is essentially a *Belastung* therapy—i.e., it is based on the stimulation of a sluggishly reacting organ to maximum effort. If we consider the insulin and cardiazol treatments as *Belastung* methods, it will be easily understood why these methods are relatively unsuccessful in chronic cases, although they considerably increase the tendency to remission in acute cases.

It is known from the works of Wortis (1938) and others that the respiratory quotient of living brain is 1. This indicates that the source of energy for the brain tissue is supplied by carbohydrates. Accordingly, it is possible to conjecture that, inasmuch as the functional disturbance of the cortex is not due to some gross morphological or circulatory disturbance—e.g., tumour and inflammation—the chemical substratum of the deranged functioning is to be sought in some unknown disturbance of the carbohydrate metabolism of the brain. Insulin is undoubtedly one of the most potent regulators of carbohydrate metabolism, although its mechanism is not yet perfectly understood. The effect of insulin on schizophrenia may accordingly be traced back, directly or indirectly, to its influence on the carbohydrate metabolism of the brain. The mechanism of remission—as well as the biochemical disturbance underlying schizophrenia—may be found in a disturbance in some intermediary phase of the carbohydrate metabolism.

A living cell is a chemodynamic apparatus which obtains the necessary supply of energy by turning glycogen into lactic acid. In the phase of restitution a part of the lactic acid is oxidised and the remainder synthesised into glycogen. The equivalent of the oxidised glycogen is procured by the cell from the blood-sugar. The fall of the blood-sugar level is prevented by the liver, which mobilises a necessary quantity of the reserve glycogen. The loss of the glycogen stored in the liver is compensated by this organ from sugar obtained from food, from exogenous and endogenous proteins, perhaps from fats. This series of processes is catalysed both in the liver and in the cells oxidising carbohydrates, by a number of ferments, regulated partly by the nervous system and partly by hormones. The phase of this process most easily observable in vivo is that involving fluctuations in the lactic acid and sugar contents of the blood.

Effects of Cardiazol Therapy

To begin with, we examined these fluctuations in the course of cardiazol treatment.

Cardiazol was administered according to our usual routine, always in the morning, on an empty stomach. Before the first blood test and the injection of cardiazol the patients lay in bed for 30 minutes. The lactic acid content of the blood was estimated immediately before the intravenous administration of cardiazol, immediately after the epileptiform seizure, and 15, 30, and 60 minutes later. This was effected by Mendel-Goldscheider's colorimetric method. Two parallel tests were made each time.

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* This work was aided by a grant from the Prince Paul Esterházy foundation.

Results of the tests are given in tables I, II, and III for acute, subacute, and chronic cases respectively.

TABLE I—LACTIC ACID AND SUGAR IN BLOOD IN ACUTE SCHIZOPHRENIA TREATED WITH CARDIAZOL

Case	Lactic acid (mg per 100 c cm)					Sugar (mg per 100 c cm)				
	Before cardiazol	After convulsion	15 min after convulsion	30 min after convulsion	1 hour after convulsion	Before cardiazol	After convulsion	15 min after convulsion	30 min after convulsion	1 hour after convulsion
1	11	119	120	70	39	98	109	130	153	137
2	9	128	125	82	28	90	95	120	128	102
3	15	112	105	60	27	93	100	115	123	104
4	10	114	118	93	45	86	92	126	142	115
5	16	95	100	84	43	77	95	120	129	119
6	9	59	71	87	42	74	85	94	103	83

TABLE II—LACTIC ACID AND SUGAR IN BLOOD IN SUBACUTE SCHIZOPHRENIA TREATED WITH CARDIAZOL

7	19	133	120	95	44	82	91	133	146	112
8	12	108	107	87	32	79	84	99	115	92
9	6	120	122	102	48	86	95	131	152	123
10	11	95	95	54	18	92	99	117	132	115
11	10	108	110	76	27	102	105	142	148	150
12	15	113	106	84	44	78	82	103	102	92

TABLE III—LACTIC ACID AND SUGAR IN BLOOD IN CHRONIC SCHIZOPHRENIA TREATED WITH CARDIAZOL

13	13	119	101	62	33	82	96	120	132	115
14	18	98	100	60	28	78	80	114	125	92
15	11	105	108	95	41	98	116	138	152	143
16	9	132	125	56	27	100	100	132	138	109
17	11	132	134	104	50	103	105	153	163	138
18	10	120	115	51	17	85	83	105	119	115

LACTIC-ACID CONTENT OF BLOOD

Comparing the values shown in the three tables we may conclude *that the lactic-acid level of schizophrenics at rest is normal* (6–19 mg. per 100 c cm.)—i e, the oxidation of lactic acid and its resynthesis *into glycogen* balances the production of lactic acid by glycogenolysis Immediately after the convulsion there is a steep rise in the lactic-acid content of the blood *from* 6–19 mg to 59–132 mg. per 100 c cm ; 15 min after the convulsion the lactic-acid values are, allowing for experimental errors, identical with those obtained immediately after the convulsion. A considerable decrease is apparent after 30 min, but even after the lapse of an hour the values have not sunk to normal level. Tables I, II, and III show that there is no difference between acute, subacute, and chronic cases regarding the *rapidity* of the fall of the lactic-acid level after the convulsion If the insufficiency of the disappearance of lactic acid—i e, the resynthesis *of* glycogen from lactic acid—were one of the factors of the supposed disturbance of carbohydrate metabolism underlying schizophrenia, we could expect inveterate cases, with their lesser tendency for remissions, to show a retardation in the disappearance of lactic acid. This, however, was [illegible] case. Our examinations show that there is no difference between chronic and acute schizophrenia in regard to the disappearance of lactic acid, and that the oxidation of lactic acid, its resynthesis to glycogen, is unaffected.

One more conclusion may be drawn from the estimations of glycogen before and after the cardiazol convulsions The muscles contain no amylase and consequently are unable to split up their glycogen to glucose. Instead they transform glycogen, in the first phase of lactic-acid fermentation, immediately to phosphate of hexose (phosphorolysis). On the other hand, muscle extracts can produce lactic acid from glycogen only and not from glucose It is plausible that the production of lactic acid from glucose by living muscles can only occur if they have already transformed glucose to glycogen In view of these facts it seems probable that the quantity of lactic acid formed during the convulsions of only a few seconds' duration does not come from the blood sugar but from the reserve glycogen of the muscles and, perhaps, the nervous system. This is the more plausible since the glycogen content of the muscles falls considerably during convulsions. In view of the lack of respiration in the tonic phase of the convulsion and its superficiality in the clonic phase, we may assume that, immediately after the convulsion, *the lactic acid produced during the seizure is for the most part still unoxidised.* This is rendered more probable by the fact that even 15 min after *the convulsion there is hardly any change in the* lactic-acid level The quantity of lactic acid produced during the seizure therefore roughly indicates the *preconvulsional glycogen content of the muscles*

It may be taken for granted that, after the convulsion, the lactic-acid content of the soft parts is identical with that of the blood The weight of the skeleton may be estimated at 16–22 per cent., and that of the muscles at 40–44 per cent of the body weight (Bischoff and Liebig) In view of these two facts we have a basis for estimating the quantity of glycogen produced from the muscles during the convulsion in the increase in lactic acid in the blood during the convulsion. The value thus obtained is 0 1–0·2 per cent In view of the *fact that the glycogen* of the muscles is not entirely exhausted during the convulsion—the organism is even capable of further *convulsions—the above number represents* the minimal possible value for the musculature of schizophrenics This value is probably considerably smaller *than the actual amount* According to these data the glycogen values of the muscles of schizophrenics are within normal limits

BLOOD-SUGAR

Simultaneously with the estimations of the lactic acid content of the blood, the *blood-sugar* was also estimated by Crecelius-Seifert's colorimetric method The results are shown in tables I, II, and III. The *values obtained on an empty stomach in the resting* condition are generally low normal. Immediately after the convulsion there is a small rise in blood-sugar; this rise continues and reaches the highest point about 30 min. after the injection. After an hour there is a considerable decrease, but the values then obtained are still above the initial level.

Similar or identical data were published by a succession of authors. The first to devote himself to the problem was Georgi (1937), followed by Pfister and then by Hoffmann. Recently American authors (E. Gellhorn; and Himwich, Bowman. Fazekas, and Orenstein 1937) have worked on this subject in connexion with *cerebral anoxia*. Almost parallel with our work is that of D. Jahn (1938) on the behaviour of blood-sugar in hypoglycæmia, we shall return to his results later.

The rise in the level of blood sugar after the convulsion, according to most authors, is due to the mobilisation of adrenaline. This, however, has not yet been proved. The mobilisation of glycogen on a large scale and the rise in blood sugar demonstrated by ourselves and other authors afford sufficient proof of the extensive alteration of carbohydrate metabolism in the course of the cardiazol convulsion treatment.

KETONE BODIES IN THE BLOOD

The close connexion between carbohydrate metabolism and fat metabolism necessarily leads to a disturbance of the former being followed by one of the latter also. A most important indicator of fat metabolism is the behaviour of the ketone bodies. For this reason we examined the behaviour of the ketone bodies in the course of the cardiazol convulsion treatment. The results of these investigations are shown in table IV. Acetone and diacetic acid were estimated together, and β oxybutyric acid separately by the Engfeldt Pincussen method. The table shows that after the cardiazol convulsion there is an increase in acetone and diacetic acid as well as in β oxybutyric acid. Their values rise in parallel lines and reach the maximal level about 15 min after the epileptiform seizure. There is some divergence between the two curves after 15 min. Acetone and diacetic acid practically disappear within 30 min, but, though the elimination of the β oxybutyric acid has also begun by that time, the values then obtained are still four or five times as high as the initial level.

TABLE IV—KETONE BODIES IN BLOOD DURING CARDIAZOL THERAPY

Case	Acetone and acid				β-oxybutyric acid			
	Before cardiazol	After convulsion	15 min. after convulsion	30 min. after convulsion	Before cardiazol	After convulsion	15 min after convulsion	30 min after convulsion
19	1·6	1·5	2·0	1·8	1·2	9·2	9·8	6·5
20	1·5	1·8	2·2	1·7	1·7	7·2	8·3	5·2
21	2·1	2·8	3·8	3·2	1·6	8·3	6·4	7·3
22	1·2	3·1	3·0	3·2	1·5	6·1	7·9	6·3
23	2·1	2·5	2·9	2·7	1·4	9·3	10·2	5·9
24	1·8	1·6	2·1	1·8	1·6	13·5	14·2	9·2

The influence of cardiazol convulsions on carbohydrate metabolism can accordingly be summed up as follows. During the convulsion the glycogen deposit of the muscles is depleted; during and after the convulsion the sugar content of the blood rises at the expense of liver glycogen—i.e., the glycogen deposits of the liver are also depleted. Similarly, during and after the convulsion there is a rise in the level of the lactic acid and ketone body contents of the blood. All these data show that in the course of the cardiazol treatment there is an alteration of carbohydrate metabolism akin to diabetes mellitus. This circumstance tallies with the observation of Nyirő (1930) that there were practically no diabetics among patients with schizophrenia.

Effects of Insulin Therapy

The mechanism of insulin treatment, with special regard to the behaviour of glycogen, was examined in the course of Georgi's and Strauss's summation treatment and not in Sakel's treatment with insulin alone. We examined the lactic acid and glucose contents of the blood.

TABLE V—LACTIC ACID (LA) AND SUGAR (S) IN BLOOD DURING COMBINED TREATMENT WITH INSULIN AND CARDIAZOL

Case	—	Before insulin	Before cardiazol	Immediately after convulsion	30 min after convulsion	Dose of insulin	Dose of cardiazol
25	LA	19	16	68	43	200	1·0
	S	90	10	10	26		
26	LA	9	17	61	54	180	0·80
	S	86	15	16	61		
27	LA	6	8	37	76	140	1·0
	S	86	10	10	15		
28	LA	10	17	113	105	160	0·70
	S	80	10	5	115		
29	LA	10	12	127	95	200	1·0
	S	70	15	10	56		
30	LA	13	15	119	101	140	1·0
	S	92	10	99	56		
31	LA	6	10	90	58	240	1·40
	S	88	5	10	30		
32	LA	15	18	84	62	160	1·20
	S	98	15	15	38		
33	LA	8	12	125	84	140	0·80
	S	79	10	10	25		
34	LA	20	15	65	48	180	0·70
	S	85	10	5	65		
35	LA	10	12	95	80	220	0·50
	S	100	15	20	62		

The first blood test was always made on an empty stomach, after half an hour's rest, immediately before the injection of insulin. After the blood had been taken, the patients were given their previously determined individual shock dose (110–240 I.U.). Wet-shock came on after 1–1½ hours and coma after 2–2½ hours. After the first 30 min of coma, blood was taken once more for the estimation of the lactic acid and sugar levels. After this the patients were given a 10 per cent. solution of cardiazol intravenously, in doses sufficient to elicit convulsions (0·5–1·4 g.). Further blood tests were made immediately after the convulsions were over, and then the patients were given adrenaline 0·001 g. hypodermically and sugar 300 g. by the mouth. Half an hour later the lactic-acid and sugar contents of the blood were estimated again.

The results are shown in table V, and the following conclusions may be drawn. During insulin coma there are no important changes in the lactic acid content of the blood, although there is usually a slight increase. After the cardiazol convulsion elicited in coma there is a considerable rise in lactic acid. In about half the cases the rise in lactic acid is the same as after simple cardiazol convulsions. In the other cases the rise is considerably less. This can be partially explained by the fact that the convulsion was less violent and consequently the muscular effort smaller than in simple cardiazol convulsions. Half an hour after the end of the convulsion and the administration of adrenaline and sugar there is a small rise in the blood sugar value, but not sufficient to reach the initial level. By the same time there is already a decided decrease in the lactic acid values.

The possibility of eliciting epileptiform convulsions in insulin coma with cardiazol and the considerable production of lactic acid in spite of the grave hypoglycæmia furnish sufficient proof of our previous supposition that the lactic acid is produced during the convulsion from other sources than the blood-sugar. They also allow of the conclusion that the reserve glycogen of the organism is not exhausted during the coma and can be mobilised by a suitable stimulus

The effect of insulin shock on carbohydrate metabolism is diametrically opposed *to the effect of* cardiazol convulsions. Insulin decreases the sugar content of the blood; according to Jahn it also decreases its lactic-acid, fat, and ketone-body contents. These are data obtained during hypoglycæmia and indicate the direct effect of insulin. Considering the fact that the insulin treatment, as we have already stated, is by no means a substitution therapy but a *Belastung* treatment, it cannot be curative unless the organism is capable of a reaction to this *Belastung*. The biochemical effect of insulin is such that this reaction can only be a change in the carbohydrate metabolism in the direction of diabetes Actually, Jahn has succeeded in proving that in patients during a remission the blood-sugar values on an empty stomach were higher than before the cure.

Summary

It was proposed to find a common denominator of the mechanisms of cardiazol and insulin in their effects as *Belastung* therapies on carbohydrate metabolism. The postconvulsive alterations of the carbohydrate metabolism in the direction of diabetes mellitus may be considered as reactions of the organism and not as direct results of the action of cardiazol.

Similarly, after the administration of insulin the organism endeavours to compensate for the toxic effect of the drug by an alteration of the carbohydrate metabolism in the direction of diabetes mellitus

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BLOCK DISSECTION FOR CARCINOMA OF THE CERVIX

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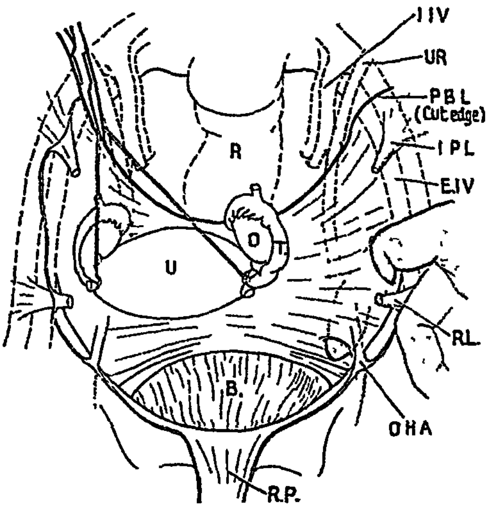
The two most serious criticisms of Wertheim's original operation are that it did not remove sufficient vagina and that it was not a block dissection. Most operators now remove practically the whole vagina, but very few attempt a *block dissection* *To remove* the original growth intact with its tributary lymphatics and glands is a sound surgical procedure that should never be omitted if technically possible No-one would dream of removing a breast and dissecting out the glands afterwards, but in the case of a carcinoma of the cervix this is the usual method adopted by most surgeons

In 1931 I began to do a block dissection, aiming at removing the obturator and iliac glands attached to the uterus. It soon struck me that there was little technical difficulty, and that the method of approach from the periphery gave a better exposure and made th[illegible] of an abnormally situated or double

Fig. 1



The figure is described below

ureter fade away Further, it made the operatio more bloodless and the subsequent dissection of th ureters an easy matter. The details of the techniqu are as follows :—

(1) The infundibulopelvic and round ligament are clamped as far out as possible, divided, an ligatured (fig. 1).

(2) The broad ligament is divided between thes points, and the two layers are separated widely, th uterovesical peritoneum being reflected and stitched to the lower angle of the wound. The uterine wall i transfixed on each side and a ligature tied to includ the medial end of the broad ligament, the tube and ovary being “ bunched ” up at the cornu (fig. 1)

(3) The sheet of fat and connective tissue along the line of the external iliac artery is stripped down to *the wall of the artery from the infundibulopelvic* ligament to the round ligament and the index finger hooked forwards and towards the bladder underneath the whole thickness of the sheet. The obliterated hypogastric artery is then lying in the crook of the finger and is divided between ligatures, the two ends being separated widely (fig. 1)

(4) This gives a remarkable good exposure of the obturator fossa, which is then cleared of its fat and glands with the finger, the contents being pushed towards the middle line. At the same time by finger dissection and with the point of the knife the iliac vessels are cleared down to the level of the internal iliac artery, all tributary vessels being tied en route. The side wall of the pelvis is then cleared of fat and glands, leaving only the vessels and the obturator nerve bare (fig. 2).

(5) The index finger is run forwards along the internal iliac artery, until the uterine artery is lifted up on it The fat and fascia are pushed in still furth towards the uterus and an aneurysm-needle passed under the uterine vessels, which are then doubly ligatured and divided The fat and glands are then pushed towards the cervix with the ends of the uterine vessels, and the pelvic floor lies bare (fig 3)

(6) In the previous steps the ureter has been gradually displaced towards the middle line and exposed where it lies on the posterior leaf of the broad ligament. This is now held on an aneurysm-needle and dissected off the leaf, and the peritoneum is divided down to the level of the pouch of Douglas —i e., the uterosacral fold. The uterus is pulled hard to the opposite side, the fat and glands are gently lifted up with sponge-forceps, and the ureter is dissected away from the side of the vagina with knife or scissors, being drawn outwards and upwards

FIG 2

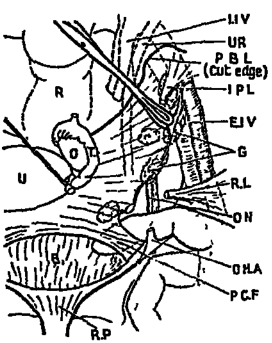


FIG 3

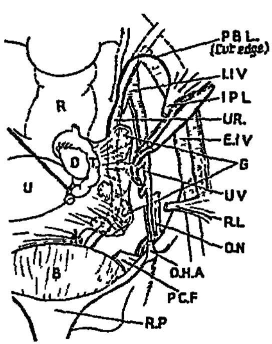
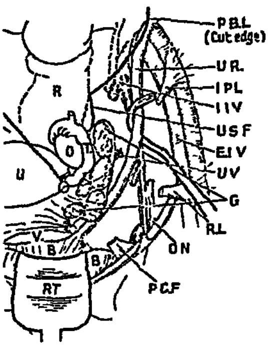


FIG 4



FIGS 1–4—Diagrams of steps in block dissection for carcinoma cervicis B, bladder, E I V, external iliac vessels, G, glands and fascia, I I V, internal iliac vessels, I P L, infundibulopelvic ligament, O, ovary, O H A, obliterated hypogastric artery O N, obturator nerve, P B L, posterior layer of broad ligament, P C F, pubocervical fascia, R, rectum, R L, round ligament, R P, reflected uterovesical peritoneum, Rt, retractor, T, fallopian tube, U, uterus, U.S.F, uterosacral fold, U V, uterine vessels, Ur, ureter, V, vagina

by the aneurysm-needle as the dissection proceeds There is far less likelihood of damage to the ureter and spread of possible growth if it is dissected in this way than if it is burrowed out with a finger along the ureteric canal in the old way This dissection is carried forwards to a point that corresponds to the junction of the ureter with the bladder (figs 3 and 4)

(7) The index finger or closed curved scissors are then hooked under the remaining sheet of upper pubocervical fascia which runs along the lateral border of the bladder This generally contains a fairly large vessel and is divided between ligatures (fig. 2) On pulling up the uterine end of this with the fat and glands and pushing the bladder downwards the remaining dissection of the ureter can be completed and the whole ureter laid bare

The rest of the operation differs in no respect from the usual method in which the greater part of the vagina is removed I have used this method on all (67) cases of carcinoma of the cervix operated on since 1931 Fig 5 shows the completed block dissection Although at first the time taken was a little longer than in a classical Wertheim's operation, now I find that it is no longer, and in fact the operation is easier, for the exposure is better all the way through It enables one to see early in the operation whether the case is operable or not, and it makes the intra-abdominal application of radium in catheters along the glands easier when the growth is inoperable In one case I have had to remove two inches of the external iliac vein which was involved in a gland and I think this was made easier by the method of approach With regard to the after effect, the initial mortality is no higher, but it is too early to say how the percentage of "cures" compares with that of the classical operation Many of the early cases, however, were late group II, and the patients are still alive and well, so one is led to the conclusion that a block dissection for advanced cases will give a better expectation of life.

FIG 5—Uterus, appendages, vagina and glands removed by block dissection Secondary deposits in five of the glands Operation 1931, patient still well and free from recurrence in 1939

The drawings illustrating this article have been prepared by Miss Barclay Smith, to whom my thanks are due

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DEFICIENCY OF VITAMIN B$_1$ IN HOOKWORM ANÆMIA

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IT has become a commonplace that much of the anæmia caused by the hookworm can be removed without de-worming the patient The routine in the Morogoro Hospital has been that de-worming is not carried out until the hæmoglobin has reached 30–40 per cent The preliminary treatment is effected mainly by massive doses of a scale preparation of iron supplemented by a well balanced diet It was found that dietetic measures had little influence on the anæmia itself, but that the general well-being of the patient was considerably influenced by the correct choice of diet In an attempt to shorten the time needed for blood regeneration experiments were made with liver extracts and blood transfusions but no advantage was gained over simple treatment with iron A high protein and vitamin diet containing especially supplements of dried brewers' yeast, had little if any effect on the hæmoglobin percentage, although it had a pronounced influence upon the general symptoms of weakness and œdema and upon the skin conditions It seemed therefore possible that the anæmia and the œdema were due to two different factors. The influence of yeast on the general condition suggested that lack of the vitamin-B complex might exist. That the injections of liver extract did not appear to influence either blood regeneration or the general condition pointed to a lack of vitamin B_1. This possibility was then investigated.

When Aalsmeer's test was used in a series of cases of hookworm anæmia, no deviation from the normal response to an injection of adrenaline was discovered, and a search of past hospital records showed that on the whole the pulse-rate of such cases and the systolic blood-pressure were low, and that the difference between systolic and diastolic pressure was not abnormally great Ankle- and knee-jerks were not abnormal. Evidence of a beriberi-like syndrome appeared thus to be lacking, but it was decided to wait for suitable cases and to observe the effect of treatment by pure vitamin B_1.

CASE-RECORDS

CASE 1—Male African native, aged about 25, admitted on Aug. 17, 1938, complaining of weakness and swelling of the legs for about a month. He was not obviously undernourished, but the skin on the shins was glazed and the skin over the thighs and abdomen dry and covered with a fine scaly mosaic. There was considerable œdema in the legs but nowhere else. The blood contained 3 million red cells per cubic centimetre, and the hæmoglobin on the Sahli scale was 40 per cent There was nothing abnormal in the nervous system or the abdominal organs. The stools contained eggs of tænia and necator but were otherwise normal. There was a faint trace of albumin in the urine. Temperature was subnormal. Aalsmeer's test was performed on Aug. 19 with 1 mg. of adrenaline given intravenously. Blood-pressure, systolic and diastolic, before administration was 90/53. There was a transitory rise for a few minutes, which reached 120/80, and then it fell to about 54 or 50 mm systolic while the diastolic pressure appeared to be only a millimetre or two lower. This lasted for fifteen minutes, when the systolic pressure steadied at about 60 mm. and the diastolic at about 45. This condition was maintained for the remainder of the hour. No discomfort was felt, and the pulse-rate rose steadily from 60 to 72.

The patient was put on an ordinary diet with a large supplement of vitamin A and given daily a mixture containing 90 grains of a scale preparation of iron. The tapeworm was removed by filix mas. Œdema did not decrease, and on Aug. 27 4 mg. of Betaxin was given at 8 A.M. The pulse was recorded hourly during the day, but no appreciable change was noticed. There was a considerable diuresis, maintained for several days, but unfortunately neither liquid intake nor output could be measured. The slight trace of albumin in the urine disappeared almost at once. Next day Aalsmeer's test was repeated. All readings were about 10 mm. higher, and the pulse pressure did not fall below 20 mm.; otherwise there was nothing to note. Œdema disappeared rapidly, and by the 31st no trace remained On Sept. 16 œdema again appeared at the ankles, and the patient was given 1 oz of dried brewers' yeast daily. On the 20th the œdema was still increasing and had reached the knees; so a second dose of 4 mg. of betaxin was given on the 21st. This was again followed by diuresis, and by the 24th the œdema had practically disappeared. Carbon tetrachloride and oil of chenopodium were then given for the first time and a number of hookworms recovered from the subsequent stools.

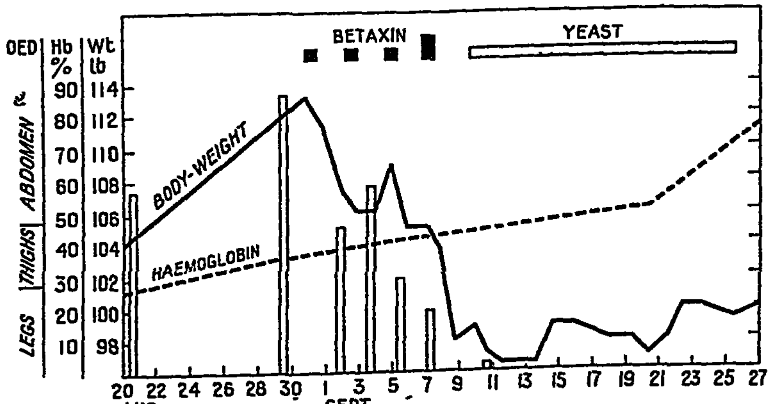

Chart showing changes in weight, hæmoglobin, and œdema in a patient (case 2) with hookworm anæmia treated with betaxin and dried brewers' yeast. The vertical rectangles indicate the extent of the œdema.

The blood changes were:—

1938							
Aug 19	.	Hæmoglobin	40	per cent,	red cells	3	million
„ 28	..	„	50	„	„	3¼	„
Sept 8	..	„	52	„	„	3½	„
„ 14	..	„	58	„	„	3½	„
„ 25	..	„	60	„	„	4¼	„

The skin condition improved and on Sept. 30 was practically normal except for a slight glazing on the shins. No œdema at all remained.

The second patient to be treated was more seriously affected and showed all the typical signs of a very severe hookworm anæmia. Œdema on admission reached to the lower part of the abdomen, the face was bloated, and the mucous membranes were white. He had by mistake been given a small dose of carbon tetrachloride in the outpatient department before admission The accompanying chart shows the changes in weight and hæmoglobin during his stay in hospital.

CASE 2.—Male African native, aged about 30, complained of weakness and swelling of the legs for the last two or three months. On admission on Aug. 19, 1938, his weight was 104 lb Hæmoglobin 25 per cent., red blood-cells 1⅜ million per c mm Blood-pressure was 90/60. There was a trace of albumin in the urine; otherwise no signs of organic disease could be found Œdema was considerable and affected the legs and the lower portion of the abdominal wall. He was put on a normal hospital diet with a supplement of vitamin A and gr 90 of scale iron a day By the 28th his hæmoglobin had risen by 10 per cent, but the œdema had increased and now included the scrotum and the abdominal wall as far as the umbilicus The Aalsmeer test performed at this time was not suggestive, for the pulse pressure did not increase.

On the 31st 2 mg of betaxin was given intravenously and was soon followed by a large diuresis and the disappearance of œdema from the abdomen. This dose of betaxin was repeated on Sept and 4, but on the latter date it was noticed that the œdema showed a slight increase and was again appearing at the lower limits of the abdomen. This increase had receded by the 5th but on the 6th a dose of 4 mg of betaxin was given, which produced a much greater diuresis and the disappearance of the œdema from the thighs and from the face, which until now had scarcely been affected A second dose of carbon tetrachloride was now given, and several hookworms were passed On the 10th, when the patient was put on a daily dose of 1 oz of dried brewers' yeast, only a little œdema could be recognised on the shin bone and round the ankle By the 14th even this had vanished and the general condition of the patient was remarkably changed for the better On the 20th the hæmoglobin was 75 per cent and the red cells were 4 million per c mm

Aalsmeer's test was repeated on Sept 6 and, except that all recorded pressures were a little higher than before and the action of the adrenaline in the initial rise of blood pressure lasted a minute or two longer, there was no significant change

DISCUSSION

It appears certain from a consideration of these cases that the administration of vitamin B_1 has a profound influence upon the œdema accompanying hookworm anæmia, and, since the diuretic effect of this vitamin has not been recorded in well nourished subjects except in doses many hundred times in excess of those used here,[1] it is not unreasonable to suppose that a definite lack of available vitamin B_1 has been demonstrated

The fact that Aalsmeer's test was negative and no nervous involvement was discovered does not to my mind deny the possibility of a lack of vitamin B_1, sufficient to produce symptoms, being present It is not yet known how long and how severe the lack of vitamin B_1 must be to produce the syndrome of beriberi, and the results of treatment are more significant than the absence of clinical signs of the disease This lack may be due to a diet absolutely deficient in vitamin B_1, to diminished power of utilisation, or to excessive loss of the vitamin by the action of the hookworm in obtaining its nutriment from the blood of its host The diet of these patients was definitely not generous, however, no cases of beriberi have been discovered among the many natives living on similar diets to those eaten by these two men, who were both estate labourers receiving a standardised estate ration The existence of a defect of absorption might be suggested by the fact that 1 oz of yeast daily did not appear to influence the œdema in case 1 Yet in case 2 the full result did not appear to be achieved until 4 mg of vitamin B_1 had been given as a single dose[2] That there was a coexisting lack of vitamin-A reserves was shown by the visual dysadaptation test, which gave on admission a D A index (McKenzie 1938) of 15½ in case 1 and of 15 in case 2 Oral treatment with vitamin A and carotene restored these to 23½ and 21½ respectively and appeared to show that there was no loss of the power of absorption of these two substances

Observations by Wells (1931), Nishi (1933), and others have suggested that a single hookworm extracts almost 1 c cm of blood each day Foster and Landsberg (1934) state that "it is apparent that the blood loss caused by hookworms is a factor entirely sufficient in itself to account for the anæmia of hookworm disease in dogs" Rhoads, Castle, Payne, and Lawson (1934) conclude that blood loss and dietary deficiency are the apparent causes of hookworm anæmia and confirm that there is no correlation between the degree of anæmia and the intensity of parasitisation Cruz (1934) distinguished between those who were sick as a result of hookworm infection and those who were merely carriers He stated that the category into which each subject fell was determined by his diet, and that symptoms appeared only when the diet was inadequate I have not been able to correlate the number of worms expelled as a result of treatment with the degree of anæmia pre-existing, but some correlation appears to exist between the economic status of the patient and the severity of his symptoms The third alternative, that of excessive loss of the vitamins by extraction of blood by the worm, would seem by analogy to be the most probable explanation In addition therefore to supplying a surplus of iron to combat the anæmia of hookworm infection, it is necessary to provide large supplies of at least two vitamins to make up previous losses, and the importance of dietary deficiencies in the ætiology of hookworm anæmia is again emphasised

SUMMARY

(1) Two cases of hookworm anæmia in which a considerable degree of œdema was present are described, where treatment with vitamin B_1 in the form of brewers' yeast and betaxin rapidly cured the œdema after treatment with iron and the provision of a generous diet had failed to do so (2) In each case the administration of betaxin was followed by increased diuresis, an action which does not appear to have been recorded apart from true beriberi (3) The result of this treatment suggests that the œdema which accompanies hookworm anæmia is due to a deficiency of vitamin B_1 which is in turn due most probably to loss of vitamins in the blood extracted from the host by the hookworm

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CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE

At the annual meeting of this hospital it was pointed out that its system of clinics all over Lancashire and Cheshire which ensure early diagnosis had anticipated the proposals made in the Cancer Bill The national survey estimated that throughout the country only 88 out of every 337 possibly curable cases are receiving treatment In the area served by the institute the number is 212 The Lord Mayor of Manchester who presided moved the adoption of the accounts, and Dr Garfield Williams, dean of Manchester, who seconded the proposal, said he thought laymen often did not recognise the great administrative capacity demanded of its medical staff in organising the work of a hospital Dr Ralston Paterson, director of the institute and hon radiologist to the hospital reported that nearly 3000 patients had passed through the hospital during the year He urged the need for a concentrated campaign to educate the public in the early diagnosis of cancer While he recognised the danger of increasing the fear they wished to dispel, and while it would be idle to pretend that cancer was not still a serious killing disease, it was no longer an invariably killing disease Yet of the common types that were easily diagnosed only 30 per cent arrived for treatment at an early curable stage

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[1] Hecht and Weese (1937) reported that in rabbits on a normal diet and on a daily intake of 100 c cm of water a diuresis of double the normal amount was induced by 0 1 g of vitamin B_1 per kilogramme of body weight

[2] Further work indicates that in these cases vitamin B_1 has a trigger like action in that little effect is produced until a certain dosage of vitamin B_1 has been given—in one case 20 mg—when the diuresis and disappearance of œdema occur with dramatic suddenness This appears to be why Salah (1938) concluded that such cases showed no signs of deficiency of B_1

THE LATTER HALF OF THE LIFE OF AN EPILEPTIC

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The case of idiopathic epilepsy which forms the basis of the following observations owes its particular interest to the careful record which the patient kept of his various epileptic manifestations during many years. This record differs from those already published not only in its greater length (28 years) and in the stage of life covered (mid-adult to old age) but also in being the record of a less severe type of epilepsy. Most of the existing records come from institutions for epileptics and necessarily refer to those who are inmates on account of the severity of their malady. In the following record it is interesting to see how far the many features of various kinds shown by the records of more severe cases can be confirmed or otherwise in the commoner and milder forms.

Case-record

Mr. X, single, aged 37, came to see me in August, 1900. The first fit he knew of was in 1883, at the age of 20, when he fell down in the street and hurt himself.

It seems possible that night attacks may have preceded this, because for some years he had always slept in his father's bedroom. Whether or not there had been any in the night before 1883, there were several during the next few years. In these he bit his tongue and awoke next morning with a headache.

Towards the end of the 'eighties the day-fits became more frequent; hence in 1891 on medical advice he began to take bromides regularly, and as a result the major fits became fewer and less severe. Besides the major fits he has minor fits which he speaks of as "queer feelings." At the time of his first visit to me he was taking potassium and strontium bromides gr. 10 of each twice a day.

Major attacks were occurring every 2 or 3 months and minor attacks every 3 or 4 weeks. The latter were slight and gave no trouble, but he was anxious to stop the major fits, which threatened to make him lose his employment as clerk in an office.

With this object on Aug. 14, 1900, 1½ drachms of bromide of potassium daily was prescribed. On this dose a major fit occurred in November, 1900, and another in January, 1901. Unfortunately this daily dose of bromide, while not preventing the major fits, was making him so drowsy and lethargic that any increase seemed out of the question.

Fortunately for him, it happened that in giving an account of his major fit of two days before (Jan. 5, 1901) he mentioned something which suggested a different line of approach to the problem. He said that the fit had occurred while he was on holiday away from home, when he took more alcohol than he was accustomed to. He was never a heavy drinker but as a rule had a glass or two of beer a day.

On the strength of his statement we agreed to try the effect of giving up alcohol entirely for a year. At the same time (January, 1901) the dose of bromide was reduced to gr. 60 a day. During the next four months he felt much better and there was no major fit; therefore on May 14, 1901, since he was still a little drowsy, the experiment was made of reducing the dose of bromide to gr. 30 daily. This was followed by a major fit on June 18, 1901. The dose was therefore put back to gr. 60 for another two months, when a similar reduction was again tried on Aug. 29. Within two weeks he had another major fit (Sept. 7, 190

It was clear that at this stage gr. 30 a day of bromide, even with a total abstinence from alcohol, was not a large enough amount to prevent major fits, but that apparently gr. 60 was effective, so long as he did not take alcohol.

On this treatment he remained completely free from major fits for the next fifteen years. From January, 1901, to the end of his life he never took alcohol again. During these fifteen years (1901–15) the minor fits continued to occur at intervals much as before. These and what he called "slight heads" will be dealt with in detail later.

In January, 1904, after he had been three years without a major fit, I suggested that he should begin to keep a record, particulars of which will be given later.

Meanwhile the further history of the case was as follows. On Sept. 15, 1915, there had been no major fit since the last experimental reduction of bromide in September, 1901. It was therefore decided to repeat the experiment and prove whether with the lapse of time a smaller dose would suffice.

The bromide was therefore reduced to gr. 30 a day, and for the next four weeks all went well. Unfortunately, however, on Oct. 26 the patient on his own initiative reduced it by another half—i.e., to gr. 15 a day—with the result that he had a major fit on Nov. 5. It occurred in the night. He found himself in the w.c. with a black eye.

Although he had spoilt the experiment, he had proved that even after all these years of bromide treatment gr. 15 a day was not enough to prevent major fits. It seemed safer to return to gr. 60 a day. This was done on Nov. 6, 1915, and there was complete freedom from major fits for a further eight years.

TABLE SHOWING TIME-RELATIONS BETWEEN EXPERIMENTAL REDUCTIONS OF BROMIDE INTAKE AND OCCURRENCE OF MAJOR FITS

Dates	Daily dose of potassium bromide in grains	Major fits	Date of each major fit	Alcohol	—
Aug 14, 1900–Jan 7, 1901	90	1	November, 1900	+	..
	..	1	Jan 5, 1901	..	..
Jan 7–May 14, 1901	60	0	..	0	..
May 14–June 18, "	30	1	June 18, 1901	0	Expt 1
June 19–Aug 29, "	60	0	..	0	..
Aug 29–Sept 7, "	30	1	Sept 7, 1901	0	Expt 2
Sept 8, 1901–	60	..	..	..	..
Free interval of 14 years					
Sept 15–Oct 26, 1915	30	0	..	0	Expt. 3
Oct 26–Nov. 5, "	15	1	Nov 5, 1915	0	..
Nov 6, 1915–	60	..	..	0	..
Free interval of 7 years					
Aug 20–Aug 26, 1922	0	1	Aug 26, 1922	0	Patient's own doin
Aug 27, 1922–	60	..	..	0	..
Free interval of 3 years					
Aug 14–Aug 30, 1925	45	0	..	0	..
Aug 31–Sept 10, "	22½	1	Sept 10, 1925	0	Patient's own doin
Sept 11, 1925–	60	0	..	0	..
Free interval of 1 year					
October–Nov 1, 1926	*	1	November	0	Patient's own doin
Nov 2, 1926–Dec. 20, 1928	60	0	..	..	..
Free for 2 years					
Total major fits in 28 years ..	..	8	..	..	..

* Details not admitted

In spite of these unhappy experiences he repeated similar experiments on himself on three further occasions. The first was on Aug. 20, 1922, when he stopped taking his medicine entirely. Five days later (Aug. 26) he fell in the street, hurt himself, and was brought home in a taxi.

The second was three years later, in August, 1925, when he reduced the dose first to three-quarters and then to half that—i.e., to a little over gr. 20. A severe major fit followed within two weeks, and he found himself in hospital.

The time-relations between the experimental reductions of bromide intake and the occurrence of major fits is shown in tabular form.

The third and last time in his life was in October, 1926, a major fit occurring on Nov. 1. He did not disclose exactly what he had done to bring it about. After that he kept faithfully to the prescribed dose. In none of the "experimental" major fits was there any question of his having broken his pledge about alcohol.

Further history.—In August, 1927, he retired from business. During the next few months his general health began to fail. The various minor epileptic manifestations were much less frequent, but he lost weight, his legs began to get weaker, and he felt ill. During 1928 he steadily deteriorated, and in the autumn of that year his legs became œdematous and he had to lie up.

In December, 1928, I saw him in consultation with his medical attendant, Dr. D. C. Barron, and we agreed that his condition was due to chronic bromide poisoning, for he had now developed an extensive papulo-erythematous rash on both shins. It was therefore decided to stop the bromide altogether and to substitute phenobarbitone gr. 2 night and morning. This change was followed by the most satisfactory results. His general health began to improve, he regained weight, and the œdema of the legs disappeared. Most striking of all, the epileptic manifestations of every kind ceased entirely.

During the following year he left the neighbourhood. I saw him for the last time two years later, in March, 1931. He was in good health and spirits and weighed over 11 st., whereas in earlier years he had never weighed more than about 9. He had not had a single "queer feeling" or "headache" since beginning to take phenobarbitone.

He died in September, 1931, but there is no detailed information as to the cause of death, except that he was only laid up for two days.

Chronological Record of Fits (1904-31)

The circumstances which led to the starting and continuation of this record were as follows. In January, 1904, although he had been three years without having a major fit, minor attacks were still frequent. I therefore suggested that it might be of help in regulating his treatment if he were to note down the day and hour at which each of these took place. I expected that after doing so for a month or two he would probably tire of it. This surmise proved incorrect. A somewhat introspective bachelor, with few outside interests, no hobby, and a daily routine of extreme monotony, he took a great interest in the recording of his attacks and, as the years went on, kept it up with Pepysian faithfulness. When he came to see me, every few months, the pocket diary was at once produced, and as he read out the day and hour of every epileptic item since his previous visit, I took them down in notes. It is from these in my possession that the record has been prepared.

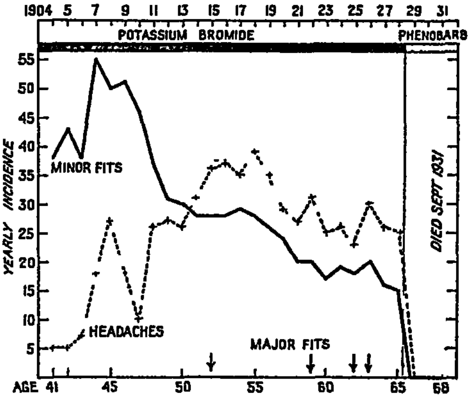

FIG. 1.—Annual incidence of epileptic events during 28 successive years (1904–31). ↓ = major fit.

Fig. 1 shows the annual number of epileptic events of all kinds during 28 years. It divides itself into two periods: the first (1904-28) during which he was taking bromides, and the second, much shorter (1929-31), when taking phenobarbitone. In this latter period there were no epileptic events of any kind. In the former period there were altogether four major fits, particulars of which have already been given. The annual number of minor fits reached its maximum (55) in 1907. After that the numbers began to diminish, at first rather rapidly, and within six years they had dropped to about 30 per annum. From then onwards the fall was steady and gradual, until in 1928 there were only 15.

The so-called "slight headaches" became more frequent from 1910 to 1916, more or less coinciding with the diminishing frequency of the minor fits. From then onwards they too became fewer, though exceeding the number of the minor fits.

RHYTHMS

In figs. 2 and 3 the records have been charted so as to show the rhythm of the minor fits. Details as to how they are to be read accompany each figure. Fig. 2 covers the whole period of 25 years of bromide therapy. There is a wide difference between the rhythm of minor fits during the earlier and the later years of the record. Indeed, for purposes of description it may be divided into two phases: the first from 1904 to 1909, the second from 1910 to 1928. In fig. 3 single years show these differences more clearly.

Phase I (1904-09).—Each of the first five years (fig. 2) shows a similar type of rhythm. Tall columns (intervals of 2–4 weeks) are usually followed by one or more short columns (intervals of a day or two). Thus during this phase there are fairly long periods of freedom from fits, which then recur every day or two for perhaps a week or more. Then follows another long interval of freedom. This phase of grouped fits will be discussed in detail later.

Phase II (1909-28).—In 1909 the rhythm changes. The grouping of fits seen in phase I becomes more rare and within a few months practically ceases. From then to the end the columns are more uniform in height—i.e., the intervals between consecutive minor fits are of a more equal duration (fig. 2). Although this rhythm continues to the end of the record, it is noticeable that, whereas from 1909 to 1919 the columns are rarely so long as three weeks, from 1919 onwards they become longer, often exceeding in length any that have gone before. In other words, from about 1919 the annual number of minor fits steadily decreases, without any change in the rhythm.

PHASE I—PERIODIC GROUPS OF FITS WITH INTERVALS OF FREEDOM

A periodicity of this kind has long been recognised. Gowers (1888) found in a series of cases that the intervals of freedom were less than a month in three-quarters and not more than two weeks in about half. Griffiths and Fox (1938) have recorded intervals of freedom as long as twelve months, and in one case there was a cycle of about two years with diminishing intervals. In most of their cases of this type, however, the intervals vary from fourteen down to two weeks. After the interval of freedom there may be only a single fit, or there may be several, either on the same day or during the following few days Griffiths and Fox call these periodic groups of fits "units of epileptic activity," each "unit" extending from the first to the last fit of the group. They also suggest that the so-called "intervals of freedom" between successive units should be measured from first day to first day and not from the end of one unit to the beginning of the next.

Units of epileptic activity.—In fig 4 the record for the first five years (1904–08) is arranged to show the grouping of these units of activity, each of which is indicated by a surrounding line. They vary in length from one to several days. Of the 82 units which, according to this method of grouping, occurred during the five years, more than 70 per cent lasted five days or less, whereas more than 50 per cent were between three and five days long. As regards longer units than these, there are several examples of units of six, seven, or even eight days which seem unmistakable. Whether a unit may last much longer than this may be open to question, but a precedent is to be found in a record in Griffith's (1933) paper, where in case 2, although more than half the units lasted only five days or less, there is one of eleven days, with fits on each day.

In fig. 4 some of the more doubtful long units are shown by dotted lines.

Length of intervals between units—Measured from the onset of one unit to the onset of the next in the way suggested by Griffiths and Fox (1938) 70 per cent. of the intervals shown in fig. 4 are between two and four weeks in length, and more than 60 per cent between three and four weeks The term "interval of freedom" is not strictly accurate, for it necessarily varies with the duration of each unit of activity.

It is probable that this type of periodicity had been present in this man for many years. On his first visit in 1900 he stated that for the last seventeen years, besides his occasional (major) fits, he had had "queer feelings" (minor fits) "every three or four weeks, and they usually recur for two or three days" This is a fairly accurate description of phase I. This monthly or nearly monthly periodicity during the

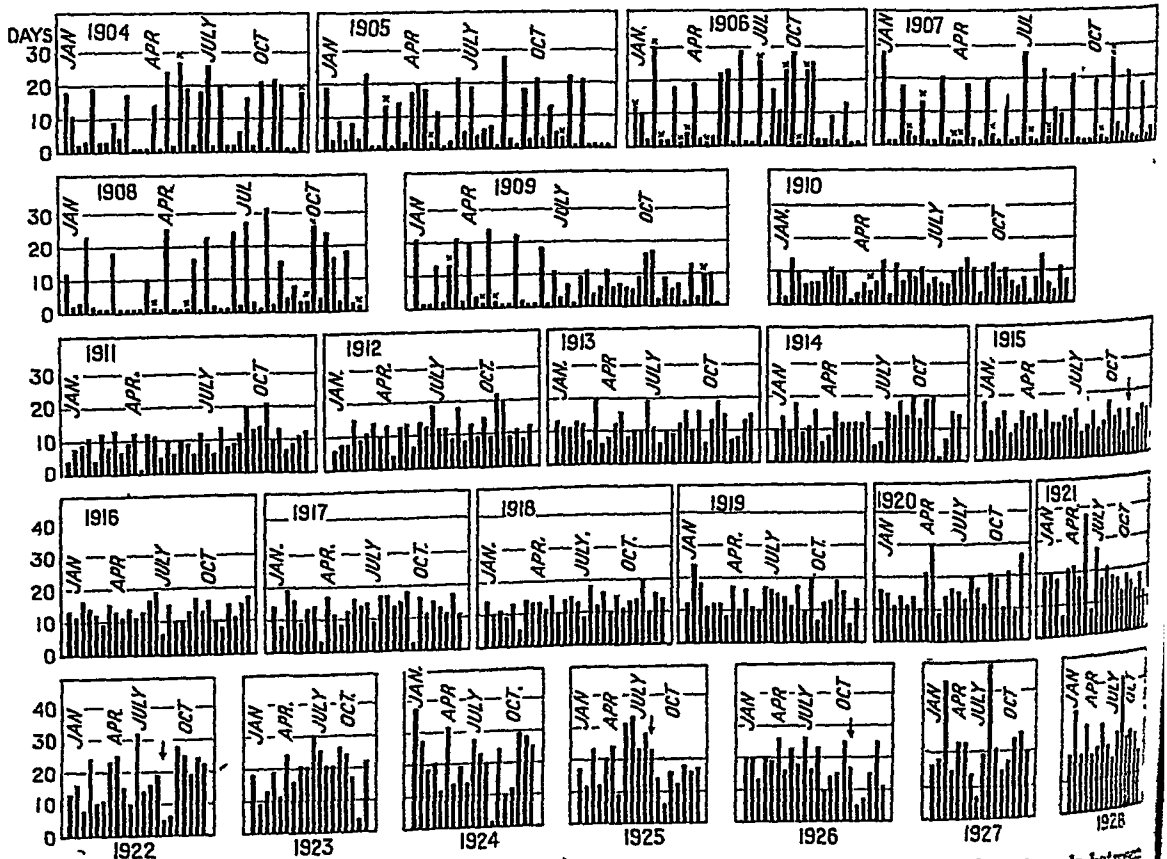

FIG. 2—Chart showing the number of major and minor fits in each year from 1904 to 1928 and the intervals between them Each of the four major fits is shown by an arrow pointing down to it. Each column indicates one minor fit and, by its height, the number of days since the preceding fit When more than one minor fit occurred on the day, each additional fit is shown by a cross The total number of minor fits in each year is therefore the of columns plus the number of crosses.

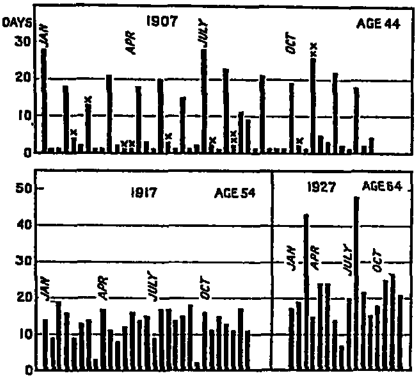

Fig 3—Charts of three years, separated by intervals of ten years, to show the contrast between phases I (1907) and II (1917 and 1927), as described in the text For explanation of charts see under fig 2

earlier years of the record calls to mind those cases in females in which fits are said to occur at the menstrual periods only A "menstrual epilepsy" is sometimes spoken of as if it were a type more or less distinct from other forms Locock in 1857, when first calling attention to the good effects of the bromides in epilepsy, did so particularly in the treatment of "that form associated with the menstrual periods" Whether there is any causal relation between the menstrual cycle and the epileptic activity is of more than academic interest If true, it is important, if untrue, it is misleading Whereas experience shows that there is some relation between epilepsy and sexual activity, such evidence as is obtainable does not support the view that the menstrual cycle itself has a direct causal relation to the occurrence of fits in an epileptic First, it is only in some epileptic women that fits tend to occur more particularly at or about the menses Gowers (1881) wrote "When closely investigated the relation is not found to obtain in more than about half the cases" Secondly, even in those cases in which the relation in time is most striking the order of the two events varies considerably from month to month In the same individual fits may precede, accompany, or follow the menstrual flow in different months Thirdly, epilepsy with a cycle of three or four weeks occurs by no means rarely in males as in the case here recorded and in three of the four cases published by Griffiths (1933) An adequate explanation seems to be that, when in one and the same person there are two processes, each of which recurs periodically at nearly the same interval of time and lasts over a series of days, the two events must often approach one another, coincide, or overlap, and when once it happens it must continue to do so for several months in succession

Whether there is a "menstrual epilepsy" or not, the term is of historical interest because of its connexion with the early use of bromides The line of reasoning by which Locock was led to give it in his case was curious He had read of a German scientist who had found that large doses of bromide made him temporarily sexually impotent Locock determined to try it in cases of "hysteria" and found it beneficial When, therefore, in 1856 a woman consulted him on account of epileptic fits at the menstrual periods, he prescribed bromide for her The result was completely successful This was first announced by him in 1857 at a meeting of the Medical and Chirurgical Society, of which he was then president After this its use in epilepsy at once became general, and in 1860 Radcliffe in his Goulstonian lectures could say "After trying it in scores of cases during the last two years, I can testify that bromide of potassium is a very remarkable remedy" Thus, for the next half century, thanks to Locock's chance discovery, bromides formed the mainstay and, until the phenobarbital group was introduced, the only reliable treatment for epilepsy

PHASE II—SINGLE FITS AT MORE EQUAL INTERVALS

In the second half of 1909 the rhythm began to change rather abruptly, and from then until his death twenty-two years later it never returned to the same grouping of fits seen in the first 5½ years of the record

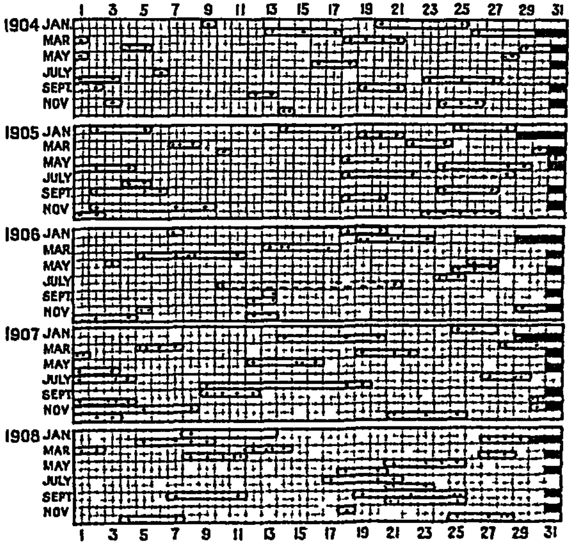

Fig 4—Phase I (1904–09) showing periodic rhythm. Minor fits occur in groups with intervals of freedom A minor fit is shown by a dot, and a "unit of epileptic activity" (a group of fits) by an enclosing line A discontinuous line marks a doubtful unit

(fig. 2). There was no change in his mode of life or kind of treatment at this time which could account for it. Probably the cause was from within rather than from without When it happened (1909) he was in his forty-sixth year. It would seem that, just as his epileptic manifestations had, if not begun, at any rate become more severe when he was about twenty, that is on entering young adult life, so they became less severe as he began to leave it behind.

Headaches—About the same time as the change in rhythm of the minor fits, slight headaches began to occur. Although he had occasionally had more severe headaches, this milder variety had not been observed. During the next year or two they became more frequent than the minor fits and, like them, became fewer as the years went on, until they ceased altogether when he was put on phenobarbitone in December, 1928 (fig. 1) They were not bad enough to interfere with his work. All he could say was that on such and such days he had what he called "a slight head" and on other days he had not The dates of all these "heads" were recorded along with those dates on which there were minor fits. As a rule the two did not occur on the same day or even on the day before or after. (They are omitted from the record to prevent confusion.)

HOURLY INCIDENCE OF MINOR FITS

Except in a very few instances the time of day at which each minor fit occurred is recorded as well as the date. Fig 5 shows the hourly incidence during waking hours. None occurred in the night. He was taking one dose (gr 30) of bromide at bedtime (10–11 P.M.) and the other on rising (7.30 A.M.) The percentage of minor fits during each of the successive periods of five years, together with that for the whole twenty-five years is seen There is considerable difference between the last named and any one of the five-year periods. In the 25-year chart the peak is about 3 P.M., and about nine-tenths of all his fits occurred from then either backwards for three hours or forwards for five hours—i e, between 12 noon and 8 P.M. In the successive five-year charts the morning attacks, at any rate in the earlier hours, become fewer and there is a well-marked shift of the peak from the afternoon to the evening hours, especially in the last two five-year periods

Langdon-Down and Brain (1929), as the result of extensive investigations on the time-incidence in epilepsy, conclude that, so far as can be ascertained, the influence of sedative drugs upon the time distribution of the convulsions is negligible. In the present instance, however, the occurrence of a peak at or about mid-afternoon coincides with the time at which, one may suppose, the effect of the night and morning doses of bromide would be wearing off, and that in a case of such slight severity one epileptic explosion would usually clear the air for the next few hours

The shifting of the peak hours to later in the day as the years went on could then be explained by assuming that the effect of the same dose of bromide lasted longer. Such a view is supported by the fact that this record covers the period, not from youth to manhood, but from middle age to old age, and that during the last of the five-year periods (1924–28), when he had reached the sixties, the bromide undoubtedly began to produce toxic effects of such severity that it was eventually found necessary to stop it entirely

FINAL STAGE: PHENOBARBITONE INSTEAD OF BROMIDE

Seeing that the result of this change in treatment was so satisfactory, one could wish that it had been made earlier. It must not be forgotten, however, that the anti-epileptic action of phenobarbitone was not discovered by Hauptmann until 1912—i e, twelve years after this case first came under observation—and that it was not until some years later that it came into general use By that time this man's attacks were getting fewer and slighter, and, although the question of changing to phenobarbitone was discussed from time to time, it was thought wiser to let well alone, especially in view of the repeated disasters which had occurred when the dose of bromide was reduced

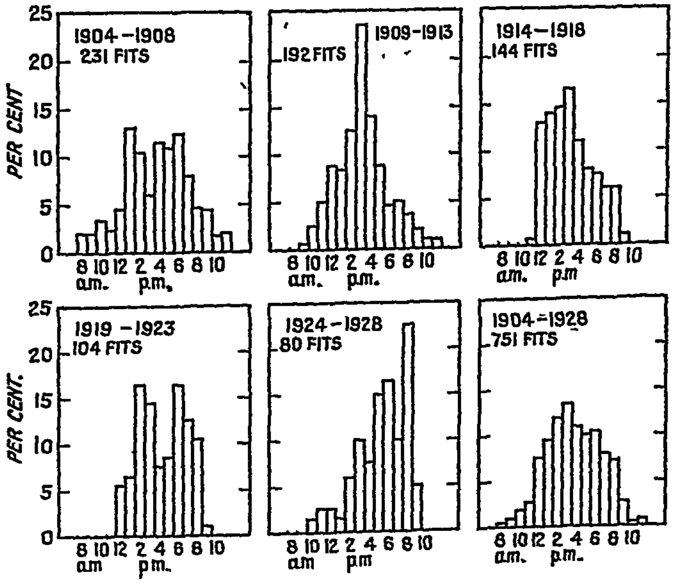

FIG. 5—Hourly incidence of minor fits in percentages during five successive 5-year periods and during the same 25 years as a w[illegible] No minor fits occurred between going to bed and rising [illegible] gradual shifting of the peak hours from afternoon to [illegible]ring the last two 5-year periods.

A Moral

The facts in this case have at least a bearing on one problem which has only arisen during recent years When is it safe to allow a person who has had epileptic attacks of any kind to drive a car again? Whereas in former times it was only necessary to warn such a person of possible dangers to himself, today one must add a similar warning as to dangers to others. Although it is well known that there are epileptics in whom the fits cease entirely after a time, the case here reported shows that a major fit may occur even after fifteen years' control by treatment So far no medical certificate is required by the authorities for a driver's licence If it were, there might often be considerable difficulty in giving one that would be just to all parties in some cases of idiopathic epilepsy.

Summary

(1) An epileptic man remained free from major fits for thirty years, provided th[illegible] he kept strictly to the treatment pre-[illegible] Minor fits continued to occur during the whole time (twenty-seven years) that he

was taking bromide but ceased when this was replaced by phenobarbitone (three years)

(2) Complete prevention of major fits was not obtained by even larger doses of bromide until he abstained completely from alcohol While he abstained from alcohol, a daily dose of 60 grains of bromide was sufficiently large, whereas 30 grains was not large enough, at any rate in the earlier years, and 15 grains was too small in later years This was repeatedly proved by experiment

(3) A record shows two distinct types of rhythm of the minor fits From 1904 to 1909 they occurred in groups or units of activity with irregular intervals of freedom of 2–4 weeks From 1909 to 1928 there was no such grouping The change from one rhythm to the other began in his forty sixth year of age

(4) The hourly incidence of minor fits shows a peak in mid afternoon, tending to move towards the evening in the later years It is suggested that this is connected with the increasing effect of the bromide (taken night and morning) as he got older

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QUININE IN MYOTONIA CONGENITA

ITS ANTAGONISM TO PROSTIGMIN

By Grace Briscoe, M B Lond

(From the Physiological Laboratory, London (R F H) School of Medicine for Women)

The discovery of the beneficial action of Prostigmin in myasthenia gravis (Walker 1934) has been followed by the observation that quinine relieves the rigidity of myotonia congenita and makes myasthenic patients worse Dr L P Laurent suggested that it would be of interest to study the physiological antagonism of these two drugs by the same experimental methods that were used in observing the antagonism between curarine and prostigmin (Briscoe 1936)

Wolf (1936) found that quinine was a specific remedy for myotonia In the four cases reported the myotonic symptoms were relieved by the intravenous injection of gr 10 of quinine hydrochloride In 1937 Kennedy and Wolf described four more cases of myotonia corrected by quinine hydrochloride They found that quinine given to myasthenics led to great increase of weakness, and that prostigmin given to myotonics caused a huge increase of muscle tonus W A Smith (1937) confirmed Wolf's observation and described three more cases of myotonia relieved by quinine Kolb, Harvey, and Whitehill (1938) found that the rigidity in a case of myotonia congenita improved under quinine but became worse when prostigmin was combined with the quinine

RESULTS OF EXPERIMENTS

The experiments here described were undertaken to determine whether the characteristic depressant effects of prostigmin in normal muscle were antagonised by quinine as they were by curarine Contractions of mammalian muscle (cat's quadriceps), in situ with circulation intact, have been recorded isometrically with a flat steel spring, ⅜ in wide, firmly held in a steel frame Neon lamp discharges have been used for indirect stimulation

Drugs of the eserine and curarine groups produce depressant effects on skeletal muscle, their differences being disclosed when the responses to different rates of stimulation are tested (Briscoe 1936, 1938) With the eserine group the size of contraction is more reduced with high rates of stimulation, whereas with the slower rates there is an early transient loss of tension, which produces a notch in the myogram In depression caused by curarine responses to all rates are affected similarly, there being first reduction of the power to maintain the tension of a tetanus and then reduction in size of contraction Quinine produces effects similar to those following a mild degree of curarisation, the decrease in the size of contraction being less than the decrease in the power to maintain tension Curarisation, in the sense of complete block between nerve and muscle, is not reached, for large doses of quinine produce a dangerous fall of blood pressure with great slowing of the heart The differences between the eserine type of depression and that produced by quinine are illustrated in fig 1, shown in response to slow and fast rates of stimulation

The notched curve seen in eserine depression is rapidly corrected by a small dose of curarine, the antagonism showing itself within a few seconds of injection (Briscoe 1936) The notch can be removed, also in a few seconds, by a large dose—e g , 40 mg —of quinine, but this dose is dangerous to the circulation A smaller dose—e g , 15 mg —injected slowly will remove the notch in a few minutes and produce a noticeable but not disastrous fall of blood pressure (fig 2) The peripheral improvement in the myogram is maintained while the circulation is being adversely affected by the drug The antagonistic effect of quinine does not last long, and, as it is eliminated, the notch due to prostigmin reappears in the myogram Substance 36 (another analogue of eserine closely related to prostigmin) produces the typical eserine effect but is eliminated very slowly; hence the notched myogram can be traced for hours In one case the notch was twice abolished by suitable doses of quinine but reappeared and was still in evidence 3½ hours after injection of the eserine like substance

Quinine is additive to curarine A moderate dose of quinine—e g , 15 mg , which has little effect on normal muscle—produces no corrective effect in partial curarisation, but the reduction in size of contraction and in power to maintain tension is accentuated

DISCUSSION

A possible cause of the abnormal myograms seen in *eserine depression must be discussed before the* antagonistic effect produced by quinine The theory of chemical transmission of nervous impulses postulates that the quanta of acetylcholine liberated at the nerve endings by excitation directly stimulate muscle-fibres and are then destroyed Eserine is known to delay the normal swift destruction of acetylcholine Brown et al (1936) have shown that muscle fibres after the administration of eserine give a repetitive discharge in response to a single stimulus This effect is attributed to the persistence of acetylcholine in the neighbourhood of the motor end plates When iterative stimulation is used, as in the present experiments, the depression which follows eserinisation is shown in the myograms by reduction in the size of contraction followed by a swift but temporary relaxation It is possible that, after the first excess of acetylcholine is worked off, there may be a more normal balance between the formation and destruction of the transmitter, enabling the muscle to emerge from its depression if the rate of stimulation is sufficiently low. This swift early fall of tension followed by a slow rise forms the notch so characteristic of myograms obtained after the administration of eserine-like substances.

Quinine may produce its antagonistic effect in eserine depression in one of several ways: (1) by causing increased destruction or diminished production of acetylcholine, reducing excess from a depressant level to the level for normal excitation; (2) by raising the threshold of the motor end-plates and so lessening the effect of abnormal amounts of acetylcholine; or (3) by exerting a direct action on the muscle-fibres. If quinine acts in a curare-like manner, it is improbable that the first explanation is correct, for it has been shown that stimulation of the motor nerve-fibres causes the usual release of acetylcholine when transmission of excitation from the nerve to the perfused eserinised muscle has been prevented by curarine (Dale et al. 1936). Harvey (1939) has made a pharmacological investigation of the peripheral action of quinine in eserinised and in normal skeletal muscle. He found that quinine abolishes the repetitive response to a single stimulus which normally occurs after eserine He has shown that quinine affects conduction from nerve to muscle by raising the threshold of the motor end-plates and that it also affects muscle-fibres directly by increasing the refractory period. These two actions of quinine in normal muscle are sufficient, singly or combined, to explain its antagonistic action in eserinised muscle

It cannot be assumed that myotonia affects only the peripheral mechanism of contraction, but it seems probable that the main disability concerns either the muscle-fibre or the passage of impulse from nerve to muscle. If the disturbance is at the motor end-plate, with abnormally low threshold, quinine would relieve symptoms by raising the threshold. If the muscles are abnormally sensitive so that they respond repetitively after a stimulus has ceased, quinine would relieve by raising the refractory period of the muscle-fibres. Until the actual cause of the disease has been discovered it is not possible to decide which action of quinine is the more important.

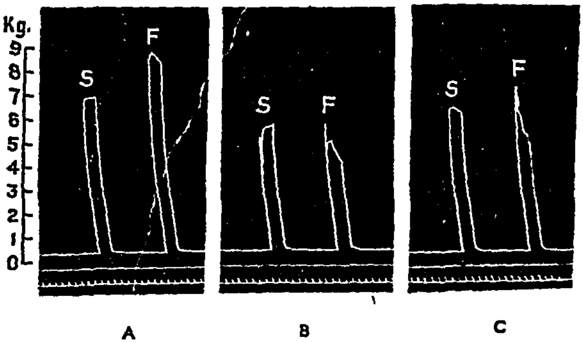

FIG. 1—Comparison of effects of prostigmin and of quinine on muscular contraction. (Cat, 4 2 kg.; quadriceps Time in seconds Two-second spells of stimulation at slow rate, 45 per sec , and at fast rate, 112 per sec., applied every half-minute. Calibration of tension in kg.) A, control curves of normal muscle, B, effect of prostigmin; C, effect of quinine, injected after recovery from prostigmin.

In myotonic patients the repetition of a voluntary movement causes improvement; the muscles relax an[illegible]ly but become tonic again on inactivity. T[illegible]e of events may be compared with that found in the experimental muscle after eserinisation When spells of stimulation are closely spaced—e g, at 1 sec intervals—the deformity in the curve disappears but reappears as soon as the intervals are lengthened to 10–20 sec. (Briscoe 1938). In both cases improvement takes place with activity and relapse follows inactivity It is not suggested from this superficial resemblance that myotonia is a form of poisoning from acetylcholine. It is more probable that in this disease there is hyper-excitability to normal amounts of transmitter, whereas in experimental eserine depression there is normal excitability to abnormal amounts of transmitter. In both cases repeated activity causes a readjustment of the delicate balance between amount of acetylcholine and threshold of excitation which must obtain, if the conception of the chemical transmission of nervous impulses be correct, in the normal contraction and relaxation of muscle.

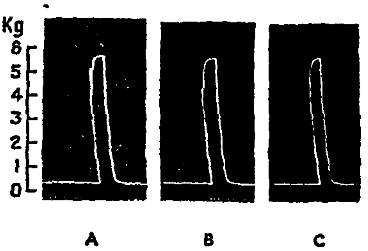

FIG. 2—Removal of notch due to prostigmin by administration of quinine. (Quadriceps. Stimulation rate 45 per sec. applied in 2 sec spells at 20 sec. intervals.) A, notched myogram due to prostigmin 1 mg. by intramuscular injection preceded by atropine 2 mg.; B, 1 min. after intravenous injection of quinine dihydrochloride 15 mg.; C, 4 min later, notch gone. Notch reappeared in less marked form during elimination of quinine. As prostigmin was eliminated the notch gradually disappeared and curve became normal in size and shape 2¼ hours after injection.

SUMMARY

(1) Quinine, injected intravenously, is antagonistic to prostigmin and synergistic with curarine in its effects on normal skeletal muscle.

(2) Quinine produces its effects on muscle both by raising the threshold of the motor end-plates and by direct action on the muscle-fibres.

(3) It is not possible to decide which of these two actions of quinine is the more important in the relief of the rigidity of myotonia congenita until more is known of the cause of this disease.

(4) It is suggested that in myotonia congenita there is hyper-excitability to normal amounts of acetylcholine.

My thanks are due to Dr. A. M. Harvey for allowing me to read in manuscript his forthcoming article in the *Journal of the American Medical Association* on the action of quinine in myotonia and myasthenia.

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A FLEXIBLE GASTROSCOPE
WITH MAGNETIC CONTROL OF OBJECTIVE

BY DENYS JENNINGS, B M Oxfd

THE invention of the flexible gastroscope brought endoscopy of the stomach within the reach of every surgeon and has led to a flood of curious statements by authors who fail to grasp its limitations The flexible instrument has the advantage that it never impinges against the posterior wall of the stomach, and so in nearly every case it can be passed far enough to give some sort of a view of the antrum But if the Schindler classical and the Schindler flexible gastroscopes could lie side by side in the stomach facing the pylorus, the image given by the flexible would be less than half the size of that given by the rigid (Gutzeit and Teitge 1937, personal observations) In practice the situation is still more to the disadvantage of the flexible gastroscope, because its weight and the anatomy of the cardia cause it to hang down towards the left iliac fossa—i e, away from the pylorus—leading to a further reduction in size of the image and a view which is so oblique that small erosions in the antrum can almost never be seen

There are other disadvantages, but they are less important The flexible instrument tends to lie in the left paravertebral fossa in contact with the posterior wall, giving a blind area just where gastroenterostomy openings come and often making the view of the lesser curve, as it winds anteriorly round the projection of the vertebral column, uncomfortably oblique The absence of controlled lateral movement sometimes makes it difficult even for the expert to determine the distance and size of a lesion (Schindler 1937) For the same reason it is almost essential to have a 90° angle of vision, with its concomitant disadvantages of small magnification and peripheral distortion, whereas with a rigid instrument a 90° field can be covered by a 70° objective

Solutions of these difficulties have been only partial Most gastroscopists like their instruments to be as stiff as possible so as to minimise the fall away to the left Schindler (1938) is experimenting with an instrument with a narrower angle Rodgers (1936) claimed that an inflatable bag was of assistance in pushing the instrument off the posterior wall, this method may sometimes be useful, but my experience of it was disappointing Other authors are content with the slight advantages to be gained by change of position and recommend more or less elaborate tables Kirihara et al (1937) have produced a mechanical contrivance for controlling the tip I have not seen this, but three obvious objections occur to me From personal experience of swallowing different types of instrument, I put 11 mm diameter as the absolute maximum for routine use in England—the German œsophagus is more roomy, and my solitary Japanese patient had a huge throat Secondly, a device of this kind converts the flexible instrument into a rigid one of a type which was tried before the war and found to be dangerous Lastly, so far as can be judged from Kirihara's plan, the design puts a twisting strain on the instrument, which would increase the liability to dislocation of a lens and to troublesome repairs

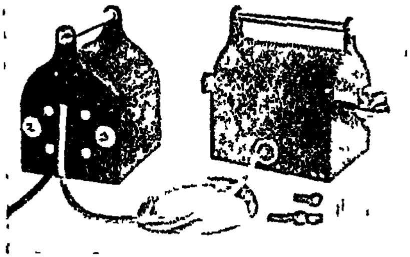

FIG 1—Magnet, transformer, and special end pieces for gastroscope

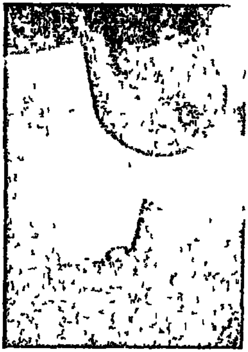

FIG 2—Lateral radiogram with the patient lying on his left side with the magnet in contact with the anterior abdominal wall The X rays are passing vertically from below upwards The tip of the gastroscope is being pulled away from the posterior wall towards the magnet

It occurred to me that a magnet was worth trying, and after some preliminary experiments, which Mr P Johnson of the Oxford University physics department kindly carried out, I submitted his ideas to the Cambridge Instrument Co, Ltd Their research department has been tireless in coping with the various teething troubles which developed before a workable device could be produced, and I express my gratitude to them

In its final form (fig 1) the apparatus consists of a bar magnet with a hemispherical tip which can be pressed into the patient's abdomen a rectifier for converting alternating current of 200–250 volts to direct current, and various rubber covered magnetic tips which can be attached to the gastroscope in place of the standard ones and are of very much the same size and shape. At a maximum, less than 4 amperes is needed, and there is a switch for reducing the power of the magnet in thin subjects or when adequate control has been obtained. Figs 2 and 3 show how the tip of the instrument can be pulled forwards away from the posterior wall.

Perfect views of the body of the stomach can be obtained in this way, but the view of the antrum is still disappointing compared with that given by the classical rigid instruments in the small proportion of cases in which it was possible to get them into an optimal position If Schindler's new narrow angle flexible instrument were made with a soft iron end piece and a more powerful magnet were used for

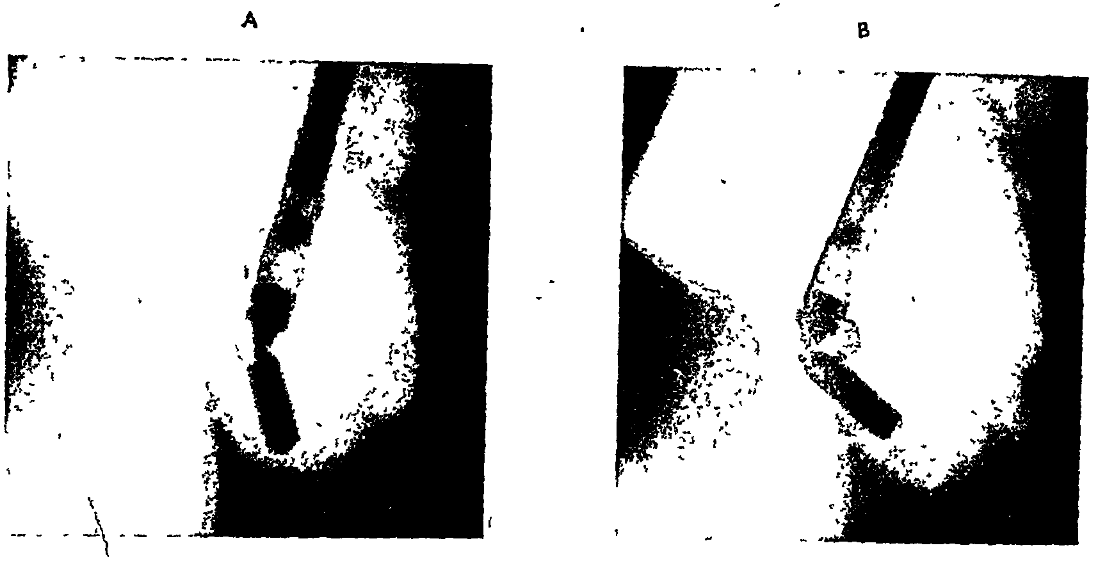

FIG. 3—Lateral radiograms: A, before the magnet has been switched on, B, with the magnet switched on

patients with a very thick abdominal wall, I believe erosive antral gastritis would become accessible The instrument, with magnet in use, moves so freely about its point of attachment that it is in no way converted into a rigid instrument, and in six months' constant use it has never caused anxiety, except when an early type of magnetic tip was forcibly wrenched off the gastroscope by an incautious movement of the magnet. Personally, I do not use opiates (which allow an endoscopist to disregard the principle that painful movements are dangerous), and it has interested me to find that the magnet can be switched on and off, flicking the tip briskly against the anterior wall of the stomach, without causing any sensation It seems, however, to stimulate peristalsis

SUMMARY

A magnetic device is described which gives safe control of the tip of a flexible gastroscope and diminishes blind areas It gives a closer view of lesser-curve lesions, but still fails in the antrum Used in conjunction with a narrow-angle gastroscope with iron end-piece, it should at last make possible the study of antral erosive gastritis The magnet, transformer, and special tips for the gastroscope were made by the Cambridge Instrument Co, Ltd.

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CLINICAL AND LABORATORY NOTES

ACUTE SALPINGITIS DUE TO BACTERIUM CHOLERÆ-SUIS

By RUSSELL HERRING, M R C S
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RESIDENT SURGICAL OFFICER AT THE HOSPITAL

Bacterium choleræ-suis may give rise to two distinct types of disease in man. (1) acute gastro-enteritis, which may run a course not dissimilar to paratyphoid fever; and (2) localised pyogenic lesions. Only a relatively few cases of infection with this organism have been described, and these have all been solitary, no instance of grouping of cases being known White (1928) has collected 25 cases, all of which except one (American) have been studied in Europe, though one developed during a voyage from Bombay.

CASE-RECORD

A married woman, aged 33, who worked as an assistant in her husband's butcher's shop, was admit to the Manchester Royal Infirmary on No 1938. For the previous week she had suffered from pain in the hypogastrium, headache and sweating. On two occasions she had vomited Her menstrual history was normal. She had had three similar attacks during the past four years, but these had not been so severe as the present illness She was found to be tender and rigid in the lower abdomen, and also tender on rectal examination No mass was felt The temperature was 100° F and the pulse-rate 92 The chest was clear. A diagnosis of pelvic peritonitis was made and conservative treatment adopted.

On the 20th her temperature was 101 2° F. and pulse 104, and laparotomy was decided upon This was done under spinal anæsthesia. Bloodstained fluid was found in the pelvis; the appendix and intestines were normal; both fallopian tubes were acutely inflamed and pus was expressed from them. Except for slight headache she had an uneventful convalescence until Dec 10 when she developed a small pulmonary infarct with hæmoptysis, which soon resolved. On the 22nd she was transferred to a fever hospital where she remained for three weeks under observation before returning home

A swab of the pus expressed from the tube was examined on Nov. 30, and from this was isolated in pure culture an organism which proved to be *Bact. choleræ-suis*. The organism was motile and fermented glucose, mannite and maltose, with the production of acid and gas, but not sucrose, dulcite, salicin, inulin, or arabinose; litmus milk, at first slightly acid, later became alkaline, neither indol nor H_2S was formed The following results were obtained by agglutination tests with standard sera (titre 1/250)

Nil 1/20	*Bact typhosum* (H) and (O) *Bact paratyphosum* A (H) and (O) *Bact paratyphosum* B (H) and (O) *Bact typhi murium* (H)
1/400	Composite salmonella
1/125	*Bact paratyphosum* C (H)
Full titre	*Bact paratyphosum* C (O) (Dr J C Kerrin)

A routine agglutination test was carried out with the patient's serum against standard suspensions, agglutination was only obtained with the composite salmonella suspension Separate salmonella organisms were then tested and with *Bact paratyphosum* C (H) suspension a titre of 1/160 was obtained Further tests were made with this suspension on Dec 8 and 22, and the titres were 1/320 and 1/160 respectively The fact that the organism did not ferment arabinose nor form H_2S tends to distinguish it from *Bact paratyphosum* C

The fæces and urine were examined on Dec 6, 12, and 19 without isolation of the organism, a further examination after an interval of 8–9 weeks was also negative The fæces, urine and serum of the patient's husband and the two assistants in the shop were examined by Dr Kerrin on Dec 15 with negative results

This case presents several interesting features In spite of the fact that all those who worked in the shop were probably exposed to infection as a result of handling meat from infected pigs, only one person was infected In this case the organism became localised in the salpinx while the fæces were persistently clear The route by which the organism reached the salpinx was not determined.

SUMMARY

A married woman of 33, who worked in a butcher's shop, developed a pyosalpinx which was found to be due to *Bact cholera suis* The bacteriological and serological findings are described

None of the persons associated with the patient became infected with the organism

We wish to express our thanks to Prof John Morley, under whom this case was admitted, for allowing access to the clinical notes, and to Dr J C Kerrin for permission to include the results of several of his investigations

REFERENCE

White, F B (1928) System of Bacteriology, London vol iv, p 129

ANGINA OF EFFORT AS THE ONLY SYMPTOM OF CORONARY THROMBOSIS

By Geoffrey Bourne M D Lond, F R C P
ASSISTANT PHYSICIAN IN CHARGE OF THE CARDIOGRAPHIC DEPARTMENT, ST BARTHOLOMEW'S HOSPITAL, LONDON

It is a well recognised fact that coronary sclerosis showing its presence by angina of effort may precede a coronary thrombosis It is also well known that a coronary thrombosis in a previously healthy person may be followed by angina of effort which is then symptomatic of injury done to the coronary circulation It is less well recognised that a patient may present the symptoms of angina of effort as a result of coronary thrombosis In these circumstances the pain starts suddenly and is maximal at its onset, though it still varies in proportion to the effort made in the way that is characteristic of angina of effort The following case is an example

A man of 61 had previously been perfectly well Four weeks before he was examined he was on the way to work one morning and had walked about 200 yards when he felt a sudden severe pain under the centre of his sternum and on both sides of his chest The pain had a burning and constricting quality and forced him to rest for two minutes He then walked on slowly and found that the pain varied according to the amount of effort that he undertook The same pain persisted and remained until four weeks later when he was kept in bed The pain was again noticed when he left his bed and still varied with effort as before It came on sooner if he exerted himself after a meal There was no shortness of breath, no orthopnœa, no palpitation, and no symptoms of shock at the time of onset

The man looked healthy and no abnormality was found in the head or neck. The apex-beat was felt in the midclavicular line in the fifth intercostal space A soft systolic murmur was present at the apex No abnormality was found in the lungs, abdomen or urine The blood pressure was 115/85 The electrocardiogram (fig 1) showed inversion of the T wave in lead IV, when it had a somewhat hooped character The Q R S measured 0 1 sec He was sent home to bed where he remained for three weeks After this the pain had completely disappeared, even on exertion There was still however, a slight feeling of pressure over the upper part of the chest on the left, which came on if he walked rather faster than usual The electrocardiogram had now changed (fig 2), the hooped inverted T-wave in lead IV having become normally upright The Q R S now measured slightly less than 0 1 sec

FIG 1

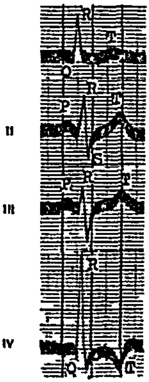

FIG 2

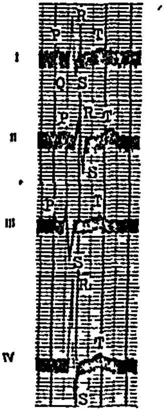

FIG 1—Tracing four weeks after onset of pain T IV is characteristic of a coronary infarction, S I is absent

FIG 2—Tracing eight weeks after onset of pain T IV has become upright, S I is absent

Unless it is realised that coronary thrombosis may manifest itself in this manner it is easy to remain unsuspicious of its presence Clinically the diagnosis is suggested by severe angina of effort coming on suddenly and slowly diminishing from the first onset Electrocardiographic examination is, of course, diagnostic.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At the annual meeting of this section held on May 9, with Dr. Hugh Crichton-Miller, the president, in the chair, a symposium on medicine and the law in relation to

Drug Addiction

was opened by Dr. W. Russell Brain. He said that drug addiction had been defined as the habitual use of a drug in order to modify the personality and to diminish the strain of life. The narcotic alkaloids presented a peculiar problem. Addiction was usually characterised by tolerance, craving and severe symptoms of deprivation, and these were all the outcome of the body's reaction to repeated doses. Tolerance must involve the balancing of progressive increase of dose by a progressively higher "gearing" of the autonomic functions; when the drug was suddenly withdrawn, the autonomic nervous system "raced" like the engine of a motor-car relieved of load. No doubt a corresponding process took place at the psychological level, and psychological factors might be more important than physiological factors in determining the onset of deprivation symptoms. In prisons, where abrupt withdrawal without medication was the rule, severe abstinence symptoms were rarely seen.

The first stage of treatment was aimed at preventing deprivation symptoms while the patient was weaned from the drug. It need not last longer than a fortnight, for the body accustomed itself to deprivation in three or four days. The next stage was extremely important, and consisted in treating the feelings of exhaustion, which the addict experienced for several weeks as though he were convalescent from a serious illness. The third stage was that of aftercare; it might last for years, and psychological guidance was essential. Psychological treatment played a large part in all three stages, but methods should be very simple in the first two. In aftercare, when conflict had been sharpened by lack of the drug, analytical methods sometimes found scope.

E. W. Adams had divided addicts into four groups: stabilised addicts, who could lead useful lives on a fixed dose; accidental addicts, who were not necessarily psychopathic and had usually acquired their addiction through receiving morphia for the relief of pain; natural addicts, who were essentially psychopathic; and criminal addicts, who took drugs for vicious purposes. It was often unwise to attempt to cure the stabilised addict. Criminal addicts received necessary treatment in prison, but the law made no provision for their treatment after discharge. Natural addicts became so on account of mental instability and were incapable of consistent occupation; they were unsocial, if not antisocial, and constituted the main problem. It was often difficult to get them to undergo treatment; under the present law they could discharge themselves at any time and need not consent to later supervision. Many of them could therefore not be treated without compulsory detention.

There were very few drug addicts in the country—probably not many more than 700. Possibly 60 or 70 per cent. could be cured by adequate treatment, but detention must last at least two years, preferably in [illegible]tion of the colony or farm type. Adminis[illegible] it would almost certainly be necessary for addicts, because of their small number, to be confined in the same institutions with chronic alcoholics and, perhaps, sexually abnormal persons. In practice, however, this would present insuperable difficulty through the difference between their requirements and those of the other classes. A large body of public opinion was extremely suspicious of attempts by doctors to compel people to do what was good for them, and vigorously opposed any tampering with the liberty of the subject. The need for compulsory detention of the drug addict might be obvious, but the same clear-cut case might not be made out for the detention of the chronic alcoholic or the sexually abnormal person.

Dr. H. V. Dicks said that the medical psychologist was often struck by the similarity of many other compulsive practices—e.g., the taking of patent medicines—to the drug ritual. Deep psychological analysis had not convincingly proved itself superior to other methods of treatment, but no real statistical evidence would be available until legal power were given to investigate larger numbers of patients from the psychological angle. Reforms often preceded public opinion—e.g., the psychological treatment of delinquents—and compulsory detention was necessary to medical knowledge of these conditions. The search for causes required study of very primitive mental mechanisms. One of the most prominent questions was whether there was any mental mechanism or factor that distinguished the neurotic drug-taker from any other kind of neurotic; and another was the extent to which mental deterioration or regression was primary or secondary. The analytical contribution, though tentative, represented the most promising effort to fathom the mental processes underlying drug addiction. These had a striking ambivalence: the drug was regarded as at once a destroyer and a healer, and endowed with both diabolical and divine attributes; its cult was also associated with phallic worship, and addiction was therefore closely linked to sexual abnormality.

Addiction arose from the necessity of defence against overwhelming instinctual pressure. The unconscious mental organisation seemed to regard the drug as a healing substance capable of neutralising the bad spirits of rage and sex which threatened to overwhelm and destroy the self. The addiction was an attempt at self-cure. It provided a substitute for the psychic effort at repression, overcoming or inhibition, with consequent economy of energy, and was especially attractive because it was associated with positive pleasure. The use of alcohol was also a substitute for homosexual expression. Depressives, paranoids and sexual perverts were alike incapable of individual or social love and were dominated by conscious or unconscious hate and antisocial feeling. Addiction to morphine occurred in persons who were relatively isolated and paranoid and therefore intolerant of intimate human relationships. It served as a buttress to their phantasies of omnipotence. The drug served as a substitute for a too hostile world, and as a remedy for the anxiety aroused by the hatred and isolation. It might become the sole object of love and hate in such persons. The pharmacological toxicity of the particular drug closely corresponded to the intensity of the hatred. In some persons the drug was less an escape than a means of preventing antisocial behaviour or a total break with reality. Dr. Dicks asked whether it was too much to hope that society would give medical psychologists legislative and administrative facilities for the study of drug addicts as it had for the study of delinquents

Dr A E **Carver**, on the basis of his experience at Caldecote Hall in the treatment of inebriates, said that although addiction was not a legal offence, strong pressure could be brought to bear on addicts in several ways An addict who had committed an *offence might be given* the option of entering into recognisances with a condition of undergoing treatment in an institution Relatives and employers could exert pressure which in practice few addicts resisted if it were insistently applied, but very few really desired to be cured A large number entered into recognisances to avoid punishment, but their unwillingness often yielded to appropriate handling In a third group conscious unwillingness betrayed itself at every turn, and this group would be the one chiefly affected if treatment were made legally compulsory *It was wellnigh impossible to treat willing* and unwilling addicts in the same institution, for the presence of the latter was detrimental to the progress of the former Recalcitrant patients were referred back from Caldecote Hall to the court to be sentenced for their original offence If relatives could be made fully aware of the scope and utility of the probation service they could nearly always arrange matters so as to place their addicts under supervision At present they exerted themselves to shield the addict from the law Probation officers might be given instruction in the facts of addiction and in the tactful handling of the accused, his relatives and the bench Experience was required for drawing up and administering recognisances The wording of the clause directing residence required special care, and the addict must above all be made to realise that he could not break his recognisances with impunity The Home Office publication on the probation service should be more widely studied

If the existing powers were fully exploited they would be found sufficient The Inebriates Act, 1898, had failed in 1921 because public opinion had not favoured compulsory powers, addiction had been considered a vice unworthy of constructive mental treatment, and the mental factor had been little recognised Moreover, little benefit had resulted from the working of the Act Selection of cases for treatment was important The closest students of the problem in this country offered no encouragement to direct legal compulsion, and the present position would not be altered if the Criminal Justice Bill became law Medical opinion differed widely even on such simple questions as the method of detoxication Parliament would be unlikely to sanction complete withdrawal as a routine, and the method might be left to the addict, who usually knew a good deal about it Other difficult questions that would arise would be that of the authority who would decide when the cure was complete, and that of the frequency with which a patient should be allowed to lapse and still be entitled to further attempts at treatment Where present opinion was equivocal and past experience anomalous, the profession should walk warily rather than seek increased powers which would be more likely to lead to discredit than to success

DISCUSSION

The **President** said that the stabilised addict was very like the epileptic who was kept on a steady dose of phenobarbitone, and his attitude was sometimes a prosocial rather than an antisocial one The correct approach to addiction must therefore be strictly confined to the questions of what the individual was escaping from, what harm he was doing to himself, and what harm he was doing to others, especially his dependants In France, where legislation was conducted by realists, such cases were dealt with by the law of the family council This body had wide and flexible powers of restraining and controlling members of the family who were drug addicts or alcoholics, and *its jurisdiction was founded on realism and social* equity The poems of Francis Thompson were a witness to the value of stabilisation in freeing creative genius Dr Carver, in showing the present possibilities of using the legal machinery, had really made out a good case for further legislation

Dr **Letitia Fairfield** urged the imposition of severer penalties on those who took advantage of the situation of an addict to sell him drugs and counteracted the efforts of relatives and others to cure him She asked whether the adaptation of the stabilised addict was satisfactory, for she had found it imperfect The question had always to be answered, as in the treatment of neurotics, whether the attempt to cure was worth while or whether it might not do greater harm than the illness The provisions of the Criminal Justice Bill, when it became law, should be used to the fullest extent She feared lest the presence of alcoholics and neurotics in the same institution might be harmful to the drug addict

Dr D A S **Blair** spoke of the futility of certifying an acute alcoholic from an observation ward, for he would inevitably be discharged in a day or two The aim must be total abstinence In other countries treatment for at least a year was required, and Sweden had ten state hospitals for treating alcoholics. The central agency in each Swedish community was the local official temperance board, a non medical authority appointed by the city council and possessing wide powers which enabled it to act as a clearing-house for all problems of alcoholism in the community Cases were referred from hospitals, social organisations, the police and other agencies

Dr **Murdo Mackenzie** testified to the value of the aid of relatives in psychiatric and psychological problems if they could be induced to accept responsibility Where pressure could be brought to bear on the addict from all sides and where he had a will to coöperate, cure was not impossible Chronic alcoholism had two distinct problems, of the rich and of the poor Stricter legislation might help with alcoholism but would not help with drug addiction

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" . We are at a stage in the history of European civilization when the fate of mental freedom is in the balance And if there is one thing that universities and their graduates should strive for it is mental freedom Without it humanity and civilization will perish Physical servitude is bearable—and we are all in bondage more or less to the State, to our fellows, and to our own responsibilities—but mental servitude, even with physical well being is death in life "—Sir **Robert Pickard**, F.R.S , vice-chancellor, to new graduates of the University of London, *Times*, May 11, 1939

" . living tissues are delicate fragile structures that respond in remarkable fashion to gentle handling but that can be destroyed by chemical and mechanical trauma as easily as the petals of a fragile flower If patients always came to the surgeon in the form of a Greek god or goddess it might be easier to visualize living tissue as a delicate, wonderfully fragile and strangely beautiful structure To realize that the blood stained crushed and distorted mass of flesh and bone which often confronts the surgeon after a serious injury can be restored into a useful and symmetrical face or hand or leg requires imagination, and a certain genius for patience and gentle care "—**Sumner L Koch**, *Surg Gynec Obstet* May, 1939, p 991

REVIEWS AND NOTICES OF BOOKS

Clinical Pædiatrics

The Baby. Edited by W. R. F. COLLIS, M.D., F.R.C.P., D.P.H., pædiatrician to the Rotunda Hospital; physician to the National Children's Hospital, Dublin. London: William Heinemann (Medical Books). 1938. Pp. 460. 21*s.*

WITH a falling birth-rate the baby has come into his own Not only are doctors producing a steady stream of handbooks for mothers and children's nurses, but serious pædiatricians are tending more and more to write of infants apart from older children Dr Collis has enlisted the help of seventeen contributors in producing a most useful handbook dealing with almost all aspects of health and disease in the first year of life Dr. C. J. McSweeney writes on immunity and ward infection. The editor has undertaken the sections on growth during the first year, prematurity, management and diseases of the newborn, metabolic disorders, cardiac and respiratory disorders, infant feeding, tuberculosis, congenital syphilis, and urogenital diseases. Prof. H L Parker deals with diseases of the nervous system, Dr P MacCarvill, in a full and well-illustrated chapter, with the skin, Mr. F Gill with general surgical disorders, Mr. W. S. Haughton and Mr Somerville-Large with orthopædic conditions, Mr. T. G Wilson with acute otitis media, and Mr. Somerville-Large with the eye during the first year Dr. Collis has been fortunate in his collaborators, and though the matter and style are somewhat uneven a reasonably high standard is maintained throughout The illustrations are not on the whole particularly well reproduced and a number of the statistical tables might have been omitted without loss, but the book has been carefully edited, and will be welcomed by practitioners whose work includes the care and treatment of the youngest member of the family as well as by those whose principal concern is with the infant.

Electrotherapy and Light Therapy

(3rd ed) By RICHARD KOVÁCS, M.D., clinical professor and director of physical therapy, New York Polyclinic Medical School and Hospital. London: Henry Kimpton. 1938. Pp. 744. 35*s.*

IN this new and enlarged edition the accounts of electrodiagnosis, electrosurgery and actinotherapy have been amplified, the chapters on the medical and surgical uses of the galvanic current have been rewritten, and a number of new chapters have been added, one dealing with the physiological properties of electric currents, another with therapeutic fever and its production by electrical methods, and two others with short-wave treatment.

Books on medical electricity by American writers usually deal at length with treatment by static electricity—a therapeutic procedure much more widely practised in the United States than elsewhere—and pay less attention to the galvanic and faradic currents Dr. Kovács, who has studied the methods of various European hospitals, has realised the value of the different forms of galvanotherapy and of the surging faradic current and gives full details of them here.

Dr. Kovács gives an account of the introduction of the ions of histamine and choline compounds in the treatment of defective peripheral circulation, but might have given more prominence to the more widely used zinc ionisation. He attributes the biological effect of short-waves entirely to the heat they in[illegible] observes that the contra-indications to this form of therapy are often ignored, especially by German authors.

In the first edition of this book Dr. Kovács relied mainly on his own results, but recent developments in electrothermic methods and the rapid increase in the use of physical therapy, particularly in the United States, have compelled him to draw on the records of others. In its valiant endeavour to cover all forms of electrotherapy, electrodiagnosis and actinotherapy his book has become almost encyclopædic, and will thus be more useful to the advanced worker than to the beginner.

Die Malaria-Überträger

By Dr. FRITZ WEYER, wissenschaftlicher assistent, Tropeninstitut, Hamburg. Leipzig: Georg Thieme. 1939. Pp. 141. RM.8.40.

THE plasmodia which cause malaria in man are transmitted only by mosquitoes of the genus anopheles. The recent claims of some authors that certain culicine mosquitoes may serve as carriers still await confirmation. But the anopheles have about 160 well-defined species and at least a further 70 sub species, varieties and races Most of these are quite harmless to man; not much more than 50 species in all are important as carriers of malaria Whether a given species is dangerous or not depends, among other factors, on its abundance and distribution, on the localisation of its breeding-places, on the ease with which the adult female can become infected by the parasite, on the habits of the adult in respect to entering houses and sucking human blood, and on its duration of life These characteristics may differ in the same species in different countries; so that a species—e g., *A. maculatus*—may be dangerous in Malaya, for example, but harmless in Assam. In the volume under review, Dr. Weyer has brought together the known facts of this kind relating to all those species of anopheles which are of recognised importance in all parts of the world and has set them forth concisely and accurately. The chief carriers are classified under countries; they are then given in alphabetical order and the main facts known about each are summarised. Much has been added to our knowledge since Covell published such a survey in 1931; this review will therefore prove of great value to all malariologists.

1. Rheumatism

By H WARREN CROWE, D M., B.Ch, M.R.C.S., L R.C.P., senior physician to the Charterhouse Rheumatism Clinic, London London: John Bale Medical Publications Ltd. Pp. 280. 12*s.* 6*d*

2 Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases

(3rd ed.) By H. WARREN CROWE London: Humphrey Milford, Oxford University Press Pp. 95 3*s* 6*d*.

1 This book is largely based on the work done and experience gained in certain clinics devoted primarily to vaccine therapy and much space is devoted to arguments in support of that method of treatment The assertions made are often at variance with the conclusions of other observers of wide knowledge and experience As an example we may quote the statement, "In children in the early stages of rheumatism or arthritis, stock vaccines are almost invariably successful" The classification adopted is rather confusing Under the heading of osteo-

arthritis are included many cases which would not generally be placed in this category The author contends that osteo arthritis is probably always in some degree infective in origin and incriminates a streptococcus, whereas he believes that a strain of staphylococcus which he has named *Micrococcus deformans* is the principal infective agent in rheumatoid arthritis He uses the term spondylitis adolescens to describe the disease more generally known as ankylosing spondylitis or spondylitis rhizomelique and in attributing our knowledge of this disease to Gilbert Scott ignores rather unfairly the contributions of Leri and other workers in America and in this country

Sections are devoted to treatment by vaccines and medicinal agents, X rays, and orthopædic measures, and rather elaborate accounts are given of laboratory technique and the preparation of vaccines and culture media But the section on physiotherapy is too brief to be of practical value and the clinical descriptions also are scanty The illustrations are however very good

2 In the third edition of this handbook further observations are recorded on vaccine therapy and other forms of treatment The tendency has been to reduce the dosage still further and in obstinate cases to combine the use of gold with vaccines, a technique somewhat different from that in general use having been devised A new form of vaccine in oil emulsion has also been tested and it is said that good results have been achieved in cases which have proved hypersensitive to the ordinary form Statistics given in an appendix, in which all forms of rheumatism, both articular and non articular, are lumped together, suggest that the results obtained by the use of vaccines do not differ materially from those obtained in institutions where other methods of treatment are in vogue It is now recognised that careful supervision and general management of cases of chronic rheumatic disease may be expected to bring about considerable improvement The policy of giving small doses of vaccines and carefully observing the effect of each dose as here advocated removes the risk associated with large doses Even those who are sceptical of the direct value of vaccines admit that they have their uses The satisfaction felt by the patient at being given regular treatment by inoculation in itself aids his recovery, it ensures that he carries out other important measures, and enables the physician to regulate his habit of life

Applied Anatomy

By Robert H Miller, M D, associate professor of anatomy, University of Tennessee college of medicine, Memphis, *formerly associate professor of surgery in charge of operative surgery* London Henry Kimpton 1938 Pp 181 30s

This book is an effort to help the student to collect the facts he has gained by observation in the laboratory and dissecting room, to relate them to each other and to apply them to the "dynamics and functions of the living body" This is undoubtedly an excellent way of looking at the subjects of the medical curriculum if the student could be induced to adopt it He is not likely to do so without more *encouragement from* his clinical teachers, who do not always seem to care enough about the application of anatomical and physiological facts to individual cases to insist on this approach to medicine A change in their attitude can already be perceived, it is partly due to the wide-spread use of radiology, to greater interest in physical culture and in the functional results of the treatment of fractures and other injuries, and to the development of new therapeutic methods based on physiological principles This work has been compiled with care and the clinical bearing of the facts set out is shown with apt comment It is a neat, handy, and well-illustrated book

Plant Biology

(3rd ed, revised) By H Godwin, M A, Ph D, fellow of Clare College and demonstrator in botany in the University of Cambridge Cambridge at the *University Press 1939 Pp 308 7s 6d.*

Until recently little attempt has been made in the premedical curriculum to relate botany with zoology and with general biological principles In this way only can it be of educational value to medical, and indeed to any other, students Godwin's book was one of the first to provide a sound basis for such an approach to the subject, and it would be difficult to find a better and more interesting account for beginners of the fundamental processes of life The chapters on the general physiology and biochemistry of the higher plants, fungi and bacteria are particularly good. This edition has been improved in minor respects and has been enlarged to include reference to all types required by the Oxford, Cambridge and London syllabuses for the first M B On general grounds it might have been improved still further if more space had been given to the important subject of food storage and the sources of plant foods for animals, and less to the detailed histological structure of the flowering plants The examination syllabuses might well be amended in this direction

Control of Conception

(2nd ed) By R L Dickinson, M D, F A C S London Baillière, Tindall and Cox 1938 Pp 390 10s

The first edition of this work, published in 1931, was written jointly by Dr Dickinson and Miss Louise Bryant, Ph D Of the second edition Dr Dickinson is the sole author, and it bears on every page the imprint of his personality The clinical applications of modern contraceptive knowledge are simple Despite his elaborate excursions into sexual physiology, statistics, and art, Dr Dickinson here succeeds in making them still simpler It has long appealed to common sense that, notwithstanding the claims put forward for vaginal occlusive devices, the rubber sheath is still on the whole the most satisfactory and reliable contraceptive method This rough and ready judgment receives confirmation from Dr Dickinson "The condom" he writes, "is likely to retain its great hold on the untutored contraceptor, and ought to enjoy a much more favourable reception on the part of the clinician in contraception" Some definite opinions of this kind are set down in the book, but they are difficult to find amid tangled thickets of distantly relevant facts, tables, diagrams, and graphs and despite a style which is in some places over condensed, in some poetically ornate, and in some frankly unintelligible

Dr Dickinson is a man of immense energy and wide experience He brings to his subject the erudition of the bibliophile, the skill of an accomplished artist, the thoroughness of the Teutonic man of science and literary habits which are the despair of his English readers The result is a book of reference rather than a practical manual To read it from cover to cover would call for a constancy of purpose and an assimilative power well above the ordinary But as a guide to the literature, and as a summary of the research up to 1938, it is first in the field

NEW INVENTIONS

APPARATUS FOR INTRAVENOUS INJECTION

THE apparatus here described was designed for the intravenous injection of glucose in Sakel's insulin-shock treatment of schizophrenia, but it can of course be used for any other intravenous injections.

The solution for injection is contained in a graduated 250 c.cm. cylinder (fig. 1). This is connected to a hand-pressure bulb fitted with a three-way tap to allow the pressure to be released. Between the bulb and the reservoir is a train of four traps, the two middle ones containing concentrated sulphuric acid, and the other two being empty. These acid-bubblers sterilise the air for producing pressure in the reservoir, and are so arranged that the acid is displaced from one to the other, so that whichever way the air passes it must bubble through the acid. The two outside tubes are provided as an absolute safeguard against any trace of acid entering the rubber tubing or solution. Between the pressure-bulb and the traps is fitted a rubber bladder to maintain the pressure. The outlet from the reservoir is connected by rubber tubing to a three-way tap to which the intravenous needle is attached. In fig. 2 the detail of this assembly can be seen. L is the three-way tap, M is a glass window, consisting of a male record cone, which allows the blood from the vein to be seen before the tap is opened through from the reservoir to the needle N.

In use the valve on the hand-pressure bulb is closed and the bladder (which has a containing jacket of linen) is inflated hard. This is done gradually so as to obtain the maximum effect of the acid on the air entering the reservoir as the pressure is raised. The three-way tap L is, of course, kept closed. When the pressure is raised sufficiently the apparatus is ready for use. The tap L and cone M are kept immersed in spirit until required, when the needle is slipped on to M and inserted into the vein, with the tap L open from N to the third leg of the tap—i e , to the air. As soon as blood appears in M, the tap is turned to connect N to the reservoir and the solution is forced into the vein, the rate being controlled by the opening of the tap L. After the final injection for the day, the pressure is released very gradually by opening the tap on the pressure bulb.

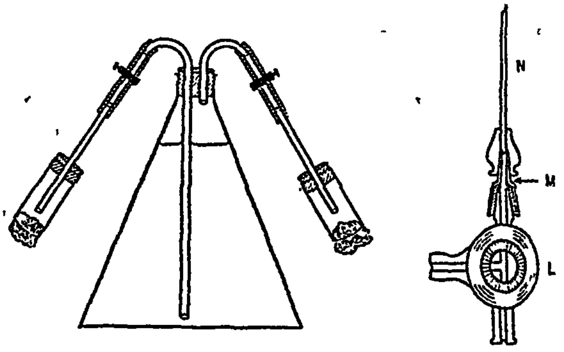

FIG. 2—Right: detail of needle and three-way tap. Left: flask for filling reservoir with sterile solution.

The reservoir can be of any size, so that a large number of injections of any desired volume can be made in rapid succession, the only change required being a fresh sterile needle. Further, in the case of an emergency, with solution in the reservoir and needles ready, the apparatus can be prepared for use from the deflated position in well under a minute. For filling the reservoir a flask of sterile solution is kept with ordinary dust-proof joints which can be flamed before use if desired (fig. 2). This is connected to the third leg of the tap L and through to the reservoir, the pressure-release tap on the bulb being open. The clips of the flask are opened with the flask higher than the reservoir and the solution siphons into it.

For convenience the whole apparatus is mounted on a small trolley, and this also carries a large glass funnel which is used as the reservoir for the glucose solution for intranasal-tube administration. The tube leading from the funnel has a glass junction piece which is inserted into the end of the nasal tube; the required amount of glucose solution is then poured into the funnel and allowed to run into the stomach via the nasal tube.

We wish to thank Prof. D. K. Henderson for his interest and for providing facilities. The apparatus can be obtained from Messrs. J. Gardner and Son, Forrest Road, Edinburgh.

HENRY TOD, Ph D. Edin , F R S E.
Walter Smith Kay research fellow, University of Edinburgh; biochemist to the Royal Edinburgh Hospital for Mental and Nervous Diseases, and

W. MALCOLM MILLAR, M.B. Edin,
D.Psych
Assistant physician to the hospital.

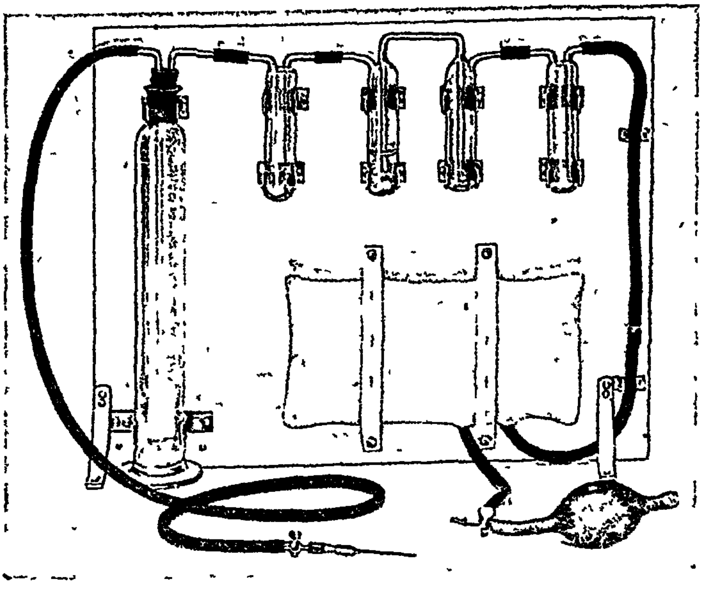

FIG. 1—The complete apparatus, showing hand-bulb, rubber bladder, [illegible]-bubblers, reservoir and needle with three-way tap.

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[See also pp 11, 13 & 15]

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THE LANCET

LONDON SATURDAY, MAY 20, 1939

IMPLEMENTING PUBLIC HEALTH

MEDICINE is one and indivisible, for its final aim is the health of the individuals of whom the community is composed All roads lead to Rome and the sanitarian, the clinician and the investigator are aiming at the same goal though they approach it by different routes It does not much matter how the end is reached provided it is reached, but at the present time the knowledge of medicine has far outrun its application The application of knowledge is as proper an object of medical research as its discovery—and probably no less difficult We may recall that the Medical Research Council took origin as part of the national health-insurance scheme, and it has always been sensitive to the directions in which a helping hand is needed In no department of medicine perhaps is the lag between knowledge and practice more evident than in what is called public health, and everyone will welcome the decision of the council to set up a special committee to advise and assist them in promoting investigations into preventive medicine This "Committee on Research in Preventive Medicine" is intended to fill the gap between its clinical committee, which is concerned with questions of curative medicine, and the bacteriological and other committees interested primarily in laboratory research In a footnote[1] will be found the personnel of the new committee and the sources from which it has been drawn It contains men with special knowledge of many branches of medical science and others whose life has been spent in the administration of public health, including members of the medical staff of the official health ministries in England and Scotland In order to make the representation as wide as possible a period of service of three years has been suggested for public health officers outside government departments

One of the immediate problems which confronts the committee is immunisation against diphtheria We may be convinced that inoculation prevents diphtheria, but, in spite of the efforts that have been made to persuade people to have their children protected, the mortality rate from diphtheria remains unaltered Lay members of health committees are asking why, after spending so much money on inoculating children, they are still seeing so many children die from it To medical men the answer may seem easy There is no town with an inoculation rate higher than 20 per cent, and most of these inoculations are done in the age group 5–10 whereas it is in the age-group 1–3 that diphtheria is so fatal The proper way to bring the efficiency of protective inoculation home to the public would be for one town to inoculate at least 90 per cent of all its children on reaching the age of twelve months, if inoculation is truly protective this would prove and demonstrate it But now comes the difficulty This can hardly be done without intimate collaboration with practising clinicians and can only be successful where the campaign has the entire confidence both of the medical profession and of the public in the district It only requires everyone concerned to know the reason for what is being done and to be filled with good will and keenness to have it done Another department has provided an object lesson of what can be done if all the people concerned do the right thing all the time It would be no unworthy object for the new committee to discover what is the atmosphere in which an experiment of this kind could be successfully put through, not under ideal conditions with an ideal staff but in the ordinary routine of public health practice A number of other similar problems come to mind the high mortality in infancy and childhood from bronchopneumonia and enteritis, cross infection in hospital wards, the efficacy of terminal disinfection after attacks of infectious disease, the exclusion of contacts from school life, and many others

But when these immediate objectives have been tackled there will still remain much to be done which cannot now be foreseen We suspect that the committee will not be content to be limited by any scheme of ad hoc research but will make it their task to interest clinicians in preventive medicine It should be possible to originate, in a few provincial towns with relatively fixed populations, departments of clinical preventive medicine—call it social medicine if you prefer—where problems can be studied and methods practised, making a beginning perhaps at the children's hospital The staff might be a whole-time director with assistants, some of whom are practising physicians, some of them members of the health department, some of them whole-time research workers This may seem now like a wishful dream but it has arisen out of the appointment of a committee which is itself a fact

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[1] The names of the committee are as follow
Sir WILSON JAMESON, F R C P dean of the London School of Hygiene and Tropical Medicine (*chairman*) J H BRINCKER, M B principal medical officer London County Council J FENTON, C B E M R C P, medical officer of health, Kensington, J FERGUSON, M B medical officer of health Surrey, W M FRAZER M D medical officer of health, Liverpool E H R HARRIES M R C P chief medical superintendent of the infectious hospitals service London County Council, A BRADFORD HILL, D Sc university reader in epidemiology and vital statistics, London School of Hygiene and Tropical Medicine, W D HOOD M B, medical officer, Department of Health for Scotland J R HUTCHINSON, M D, medical officer, Ministry of Health, R A McCANCE F R C P reader in medicine, University of Cambridge A S M MACGREGOR M D, medical officer of health, Glasgow R H PARRY M R C P, medical officer of health, Bristol, R M F PICKEN, M B Mansel Talbot professor of preventive medicine, Cardiff; W M SCOTT, M D, medical officer Ministry of Health J C SPENCE, F R C P assistant physician Royal Victoria Hospital Newcastle-on-Tyne W W C TOPLEY F R C P, F R S professor of bacteriology and immunology, London School of Hygiene and Tropical Medicine and D K M CHALMERS M D administrative officer National Institute for Medical Research (*secretary*)

NATURALISTIC CONTROL OF MALARIA

The deliberate intensification of natural processes which tend to limit the production of mosquitoes or their contact with man presupposes a knowledge of such processes; and since anopheline species differ in structure, bionomics, inherited instincts and behaviour (the last being in part conditioned by their local surroundings), that knowledge needs expansion far beyond its present extent One way—and perhaps the best—of tackling the subject is by local studies aimed at discovering whether there is some specially vulnerable point in the insects' life history to which attack should be directed in order to restrict their activities.

It is on rural areas that malarial infection falls with greatest weight, and their inhabitants are in the main poor and ignorant, so that any means of malarial control selected must be simple and cheap; here naturalistic methods offer hope of accomplishment by making use of the general desire of the peasant to work for the protection of his family from illness L. W. HACKETT and his collaborators[1] describe a variety of ways in which the engineer and health officer have been able to effect changes of environment so as to control the breeding activities of the anopheles which are most dangerous in any area. They maintain that, in prevention, speed and completeness are costly out of all proportion to their worth, and that slow steady progress is preferable to the postponement of preventive work while some more perfect method of aggression is being sought. The same naturalistic method may be used with benefit in opposite directions in different places. Thus reversing the automatic flood gates at Durazzo and admitting the sea at high tide is turning a marsh into a salt-water lagoon, destroying *Anopheles elutus*, the local malaria carrier, and giving the government profits on a fishing concession which have more than covered costs. On the other hand, in the Netherlands the replacement of brackish by fresh water, effected by making new polders, is confidently expected to substitute an innocuous for a dangerous anopheles[2]

Control by such methods is not always plain sailing. The need for full collaboration from the local inhabitants is illustrated by the experience of C. FERMI in the Sardinian lakes. Here carp and gambusia were introduced, since carp feed on the surface algæ whose presence protects the anopheles larvæ from the gambusia, but the inhabitants fished out all the carp and ended the experiment. A more serious difficulty is that changes of environment that discourage one noxious type of insect may encourage another equally objectionable. Thus the mechanical clearing of village tanks may displace *A. annularis* but allow *A veruna* to breed, and under certain conditions a few of the latter may be as dangerous malaria carriers as many of the former. In the same way, the deliberate vegetable pollution of stagnant water ensures that only culicines will breed in it, but if such action is taken where Bancroftian filariasis is endemic a good antimalarial measure leaves or produces conditions excellent for the spread of filarial infection. This is but one of the pointers to the unescapable need that means for the naturalistic control of malaria must themselves be rigidly controlled.

MIOCENE MAN

"Praevalebit veritas," said Huxley[1]—but every attempt to lengthen the seven days of creation and to put further back the date of man's arrival in this world has met with tremendous opposition. Thus it was with John Frere's discovery of palæolithic implements in 1797, Benjamin Harrison's of eoliths in 1865 (not officially recognised before 1888), Charles Dawson's of Piltdown man (or woman ?) in 1908–12, and Reid Moir's of sub-crag implements thirty years ago (not generally recognised until a dozen years later). The evolution of early man's artefacts is analogous to that of zoological species. Reid Moir, who has not only examined all the main types of flint implements but has also learnt how to make several of the more primitive forms, successfully tried out their cutting powers, and experimented with and explained their patination, has traced the evolution of eoliths through the sub-crag rostro-carinates to the Chellean hand-axes of 100,000 years ago. To understand what this means one must remembe that the main geological periods are the primary secondary, tertiary, and quaternary, the last named consisting of pleistocene and recent. Th Chellean phase is found at the beginning of th pleistocene. Benjamin Harrison suspected that hi eoliths went back to the tertiary period, but th gravels which bore them could not be definitel dated. The possibility was turned into a probability by the discovery of the tertiary Piltdow skull; but the proof was Reid Moir's discovery o eoliths in the gravel underlying the red crag o Suffolk (the earliest pleistocene stratum of tha area). With these eoliths were other and mor highly evolved rostro-carinate implements, piece of bone shaped by human hands,[2] and a sling stone similar to those used today by aborigines i New Caledonia.[3]

The presence of man in the pliocene (lates tertiary) period having thus been established, th question arose as to his presence in the nex preceding—i e., miocene—phase of the tertiar period. The pliocene being characterised by rostro carinates, the suggestion was made that perhap the simpler eoliths belonged to the miocene which phase has not been found in England the deposits having been destroyed by natura agencies. Miocene deposits, however, exist nea Aurillac in France. Therefore the late Ernes Westlake collected thousands of flaked flints thence to answer the question. Unfortunately he di before being able to examine them all The lat Prof. W. J. Sollas, of Oxford, also died before being able to make a definite decision about them. Ray Lankester, however, recognised among the Aurillac specimens one or two rostro carinates similar to those of the sub crag deposits and the great resemblance of many of the eoliths to those found in Kent by Benjamin Harrison. Westlake's collection has been submitted for examination to Reid Moir, who has now announced his conclusions in the Huxley memorial lecture for 1939 delivered at the Imperial College of Science and Technology ("The Earliest Men," published by Macmillan and Co., 1*s*.), in anticipation of the publication of the evidence. (1) the specimens from Aurillac are not of so high a degree of workmanship as the sub crag implements; (2) very numerous specimens are clearly Harrisonian eolithic types; and (3) many of the specimens are artefacts probably representing the first attempts to make real tools. Thus in all probability the existence of man has been pushed back a further stage to the miocene age and an answer given to Huxley's question: "Was the oldest *Homo sapiens* pliocene, or miocene, or yet more ancient?" This agrees with Sir Arthur Keith's suggestion that "the date at which human and anthropoid lines of descent began to diverge lies near the beginning of the miocene period. On our modest scale of reckoning, that gives man the respectable antiquity of about one million years."[4] This period Reid Moir extends to about double, but as yet there is no reliable time scale.

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[1] Hackett, L W., Russell, P. F, Scharff, J W., and White, R. S, *Bull Hlth Org L o.N.* 1938, 7, 1016.

[2] [illegible], 1938, 2, 894.

[1] Huxley, T. H, Evidence as to Man's Place in Nature, 18

[2] Moir, J R, The Antiquity of Man in East Anglia, 1926, p

[3] Moir, *Man*, 1929, 29, 62

THE PSYCHOLOGIST IN WAR-TIME

THE possible effects of aerial war upon this country can only be gauged in general terms. To make plans for coping with all the many kinds of casualties it might cause is an extraordinarily difficult task, which demands sympathetic consideration for those who are engaged upon it. For this reason, though nearly a year has passed since the prospect of sudden emergency first arose, the tendency of medical men has been to control any impatience they have felt over the absence of published information about the schemes that would come into force in war.

While it would no doubt be possible to make out a general case in favour of wider knowledge of other official plans, we are particularly concerned for the moment with the arrangements being made to ensure the best use of the limited number of medical men and women trained in psychological medicine. Whatever else may or may not happen in a war directed against the civilian population, there can be no doubt that the services of such practitioners would be in great demand. Even in civil life there is a shortage of trained medical psychologists and psychiatrists, and under the additional burden of war—or even the threat of war—the shortage would become acute. This would happen at the very time when the psychologist might be of greatest help; and we should like to be sure that his potential contribution has received all the attention it deserves. The contribution of the medical psychologist is not merely curative or palliative; it may be preventive. And since psychological disorders are apt to require much time for their resolution, the importance of prophylaxis is even greater in this than in other branches of medicine. Here if anywhere we must take special care to economise our resources by informed and detailed planning. Though the relations of general and psychological medicine are progressively improving, and clinicians are approaching their cases on psychological lines, fundamental knowledge of psychological work is still possessed by few outside the psychological specialty. There has been no time as yet to train, or even to arrange for the training, of an adequate number of clinicians capable of applying in their own special fields, or in general medical diagnosis, the concepts and knowledge required for the handling of this group of disorders. It is true that the invasion of general medicine by psychological ideas is reflected in apparently vital differences of opinion over the incidence, significance, nature and treatment of psychological factors. But it is equally true that the really important divisions—especially as they are likely to affect planning for war-time—do not exist between the different groups in active practice in psychological medicine but rather between those whose training and work has been "organic," and those who take a dynamic view of psychological disorders.

These facts are certainly known to the authorities charged with devising plans for an emergency, and the MINISTER OF HEALTH has been speaking this week of the heavy demands a war would make on those able to treat psychological disorders. The arrangements under which they would have to do so, however, are far from clear, and there is little reassurance in such brief statements as that made by the Ministry to the *News Chronicle* on Monday. "The arrangements," the newspaper was told, "are that these cases will be treated at first-aid posts and given a sedative, and if they are in a fit state will go home. Bad cases will be sent out to one of the casualty hospitals, where there will be special departments under neurologists." The exact meaning of the last phrase, in a statement intended for laymen, cannot easily be assessed, but it does nothing to decrease doubts and disquiet already existing. Although the anxiety of medical men to know their place in an emergency scheme is a natural and general phenomenon, we have reason to think that medical psychologists feel the lack of information with particular keenness—partly because so much of their prophylactic work falls to be done before the outbreak of hostilities. We cannot help hoping therefore that those concerned with schemes for psychiatric work in time of war will not forget the peculiar characteristics of such schemes and will soon allow them to become the subject of public medical approval or constructive comment.

Prof. C. A. Lovatt Evans, F.R.S., will deliver the third Sharpey Schafer lecture on Friday, June 9, at 5 P.M., in the University of Edinburgh New Buildings. He will speak on the metabolism of the heart.

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[4] Keith, A., *Lancet*, 1927, 2, 497.

ANNOTATIONS

X-RAY TREATMENT OF INFLAMMATION

Both in Europe and in the United States the possibility of treating acute and chronic inflammatory conditions with X rays has been investigated by many workers. In reviewing American findings Desjardins[1] concludes that the outstanding effect of the irradiation is a destruction of leucocytes resulting in the liberation of protective substances He points out that voltages of 100 to 150 kV are preferable to higher ones and that the doses must also be kept at a low level; he suggests a single dose of 10–50 per cent of a skin-erythema dose for acute, and 50–80 per cent for chronic, inflammations In a longer and more elaborate paper Mathey-Cornat[2] of Bordeaux refers to the treatment of inflammation at three sites—the mouth and throat, the skin, and the genital organs For infected tonsils he favours irradiation with doses of 50–100 r, repeated as often as may be necessary He is perhaps less enthusiastic than other French workers[3] about the radiotherapy of inflammations of the skin, but he thinks it undoubtedly useful in association with other methods. In disorders of the female genital organs irradiation is often, he says, the treatment of choice, though the effects of possible castration must always be borne in mind Mathey-Cornat believes that if great care is taken to control the doses given a temporary sterilisation can be obtained exactly as desired If the patient is young—particularly if she is a nullipara—X rays at 170–180 kV are used, and the dose at a single sitting is 120–180 r to each field If not even temporary sterilisation is permissible symptoms may still be alleviated with doses as low as 50 r per field Irradiation is particularly recommended for genital tuberculosis—a condition serious enough to justify slight risks and itself likely to produce permanent sterility

The results claimed in these papers are so good that it is a little surprising that the method has so few exponents in this country Radiological practice includes the treatment of many benign lesions, but most of the hospital departments here would be frankly disconcerted to find their waiting-rooms filled with cases of tonsillitis, osteitis associated with dental caries, tuberculosis of the testis, and pelvic inflammation in women Leaving aside certain recognised techniques for chronic inflammatory diseases, the results reported in Britain have been disappointing, but the weight of opinion elsewhere seems to be against these findings, and further investigation under controlled conditions is called for. In the therapy of malignant diseases, British technique is second to none, and it would be a pity to miss other possible benefits of irradiation when clinical research on them presents no great difficulty

THE FATE OF TRANSFUSED BLOOD

How long does a donor's blood remain in the circulation of the recipient? Many technical difficulties have interfered with attempts to answer this question, and no certainty has been reached. In point of fact we do not know how long a normal erythrocyte continues its existence; for the indirect methods, such as calculating from the excretion of hæmoglobin breakdown products, have given discrepant figures More direct methods became available with the introduction of transfusion; it became possible to measure the result of transfusion by estimating the hæmoglobin before and afterwards Here again, however, the results were not precise enough to show how long the donor's blood remained in the host. An impetus was given to further inquiry by the discovery of the blood-groups, for when a patient received blood of a different, yet compatible, type it became possible to trace the fate of the foreign blood corpuscle by testing agglutinability repeatedly In this way it was judged that the donor's blood might remain in currency for a hundred days

A fresh advance is described by Dekkers[1] By using the M and N groups, he has been able to eliminate a source of doubt arising from the actions of the iso agglutinin factors as ordinarily considered in transfusion, the I, II, III, IV types. It became possible to transfuse blood of the same iso-agglutination type as between host and donor, yet with differing M and N groups, with their independent agglutinins. The fate of a transfused blood of one of these types could be traced in the recipient's blood of a different type, and without the complicating side-effects of iso-agglutinin elements. Some 12 cases were worked out in detail on repeated occasions, and Dekker's figures indicate that donor blood may remain in the recipient's circulation for some seven or eight weeks.

BACTERIOLOGICAL EXAMINATION OF WATER

In 1934 the Ministry of Health published a report on the bacteriological examination of water supplies which was intended to introduce some measure of standardisation into the technique of water analysis The success that this venture achieved is shown by the fact that, despite its being reprinted in 1936, no copy of the report has been available for some months The new edition,[2] which has just been published, is rather larger than the old and shows evidence of having been extensively rewritten During the last few years, and particularly since the Croydon outbreak of typhoid in 1937, a demand has arisen among water undertakers, engineers, sanitary inspectors, administrative workers, and others not possessed of special technical knowledge, for information on the laboratory control of water-supplies An attempt to meet this demand has been made in the new edition of Report No 71 by dividing the subject matter into two parts, the first addressed to the non technical reader, the second to the water bacteriologist alone The first part, which incidentally will be of considerable value to the ordinary medical officer of health, gives a simple description of the rationale of the bacteriological analysis, and of the frequency and type of examination to be undertaken; discusses at some length the interpretation of the results, and lays down a suggested classification of piped water-supplies based on the coliform test. Attention is drawn to the importance in water, as in milk control, of examining numerous samples by a simple test rather than occasional samples by a series of more complicated tests Too often in the past even large water undertakers have been content with a full bacteriological and chemical examination every three months—a method which afforded no security against serious contamination in the meantime It is now suggested that a simple coliform examination, with or without differentiation of the coliform types, should be carried out as a daily routine by the larger water undertakings, and as frequently as possible by the smaller bodies. In this way a check will be kept on the quality of the water and immediate attention directed to any deterioration of the supply. In the second part of the report the technique of the various methods of examination is described in some detail. The description of the plate count appears to be practically unaltered. The coliform count is dealt with more fully, the sampling error of counting by the liquid dilution method and the problem of reporting the results receiving greater consideration than in the previous edition. In the differentiation of the coliform bacilli the old and rather tedious method is retained of plating from one or two of the fermented MacConkey tubes, picking off individual colonies, and testing each one separately in a number of differential media but in addition it is recommended that a trial should be given to the more rapid selective liquid media method which makes use of the 44° C. MacConkey test as a means of demonstrating the presence of fæcal coli. The report is superior in its arrangement to the previous one, and will be welcomed by technical and non-technical readers alike. In its adaptation to meet existing conditions, its introduction of the most recent methods, and the stress it lays on fundamental principles, it will be greeted as a vital compilation which carries on not unworthily the tradition of imagination and efficiency introduced into water control by Houston.

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[1] Desjardins, A U, *Proc Mayo Clin* March 22, 1939, p 177
[2] Mathey-Cornat M R, *Pr méd* April 12, 1939, p 544
[3] [illegible], 1935, 1, 504

[1] Dekkers, H J N, *Acta med scand* 1939, 99, 587
[2] *Rep publ Hlth med Subj, Lond* No 71 (Revised Edition) Min Hlth H.M Stationery Office. 1939.

CORAMINE IN ANÆSTHETIC EMERGENCIES

EVEN the most prudent anæsthetist is occasionally faced with the necessity for measures of resuscitation, and it is important that he should know the real value of the many drugs offered to him for this purpose. In practice he relies first and mainly on artificial respiration. When respiration has been restored what help can drugs give him in bringing back the failing circulation? One drug which has a considerable reputation in this connexion is Coramine and its practical value has been studied lately by Whitehead and Draper.[1] The antidotal action of coramine varies with the physiological conditions present, the depth of the narcosis, the particular depressant against which it is employed, and the dose given. Respiratory stimulants lose most of their potency when asphyxia is extreme, and indeed they then seem actually to hasten the cessation of breathing. To explain this fact Whitehead and Draper point out that *intensifying the activity of the respiratory neurons increases their rate of oxygen consumption,* so that if this increased activity fails to improve their oxygen supply death of the centre quickly follows. Therefore, when an analeptic such as coramine is injected during treatment of asphyxia care should be taken to maintain a free airway and to enrich the oxygen content of the inspired air. Experimentally it appeared that coramine had an antidotal action only against the lighter levels of narcosis, that it was capable of stimulating the respiratory centre depressed by Avertin and ether but was ineffective against barbiturate depression. Large doses of coramine were found to intensify respiratory depression, and when used for purposes of resuscitation from experimental chloroform overdose it almost doubled the mortality. It seems well established that coramine is capable of raising the blood pressure as part of a generalised excitatory action on the medulla, but this effect is often absent when the blood pressure has been lowered by circulatory poisons such as chloroform, and there is no evidence that the local action of the drug on the heart is anything but harmful.

LONDON UNIVERSITY MOVING IN

WHEN the principal of London University made his report last year the southern block of buildings, with the tower, was finished and was already in occupation except for part of the library. Now he reports further progress. During the long vacation the remainder of the books were moved from South Kensington and all the library rooms are now in use. The two beautiful rooms given by the Middlesex county council, the Goldsmiths' library, the periodicals reading room, the Harry Price library of magical literature, the music library, with its piano, pianola, and gramophone, its 4000 books and scores, and its 2000 gramophone records and pianola rolls, and the Sir Edwin Durning Lawrence library, which reproduces Sir Edwin's original room in Carlton House Terrace, are all now available for readers. The building of the block north of the tower progressed rapidly last year, and in September the Institute of Education left Southampton Row for its new quarters, being followed in January by the School of Slavonic and East European Studies. The university is now embarking on the remaining five sections of its present programme—Birkbeck College, for which a site is being cleared in Malet Street, the School of Oriental and African Studies, which will be at the corner of Thornhaugh Street and Woburn Square, the Institute of Historical Research, the ceremonial hall, and the union. The wing that will contain the Institute of Historical Research, on the east side of the tower, will complete the first and major part of the balanced scheme of the central buildings. With grants from the National Fitness Council and the university, and a gift of £50,000 from Lord Nuffield, the £100,000 needed for the students' union has now been raised, with enough over to cover equipment. Plans are already drafted for the new building, and the old union is being moved to temporary quarters so that its site may be cleared for the erection of its permanent home.

INTER-RELATED AMINO-ACIDS

THE most obvious method of determining which constituents in a medium or diet are essential for growth has been to omit from the mixture each component in turn and to note the result. Doubt is thrown on the validity of this method by a paper from Gladstone,[1] working in the Bland Sutton and Courtauld institutes, Middlesex Hospital. He found that growth of anthrax bacilli in media containing only amino-acids and inorganic salts was greatly retarded by the absence of the amino-acids valine, leucine and isoleucine. If these compounds were added together to the deficient medium growth was much accelerated, but if they were added singly each caused a complete inhibition of growth. The toxic effect of the added valine could be counteracted by the simultaneous addition of leucine, and vice versa; on the other hand the toxic effect of isoleucine could only be overcome by the addition of both leucine and valine. Similar inter-relationships were found between valine and threonine, between valine and α-aminobutyric acid, and between threonine and serine. The fact that some growth did take place in the absence of the three amino-acids valine, leucine, and isoleucine was first attributed to the presence of traces of these substances in those amino-acids in the medium which had been derived from natural sources When these were replaced by amino-acids prepared synthetically (with the exception of cystine, arginine and histidine) delayed growth still occurred in the absence of valine, leucine and isoleucine, and this was found to be linked with the presence of the arginine and histidine themselves. When these two amino-acids were excluded from the medium, no growth occurred in the absence of the former three compounds, but when they were added singly the inhibitory effects were seen as before. No evidence was obtained in favour of the suggestion that the anomalous effects could be attributed to the amino-acids of the *d*-series present in the racemic synthetic compounds used, although the influence of these compounds in metabolism is now being more generally recognised.[2]

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[1] Whitehead, R. W., and Draper, W. B. *Surg. Gynec. Obstet.* May, 1939, p. 892.

[1] Gladstone, G. P., *Brit. J. exp. Path.* April, 1939, p. 189.

Bacillus anthracis, like some other bacteria, can be "trained" to utilise ammonia as its sole source of nitrogen, and although growth in such media is poor and delayed, the organism can be subcultured indefinitely. Gladstone points out that this does not necessarily imply that any particular amino-acid is not essential for growth; the acceleration produced by its addition rather implies that it must play an essential part, and that in its absence some time must elapse for its synthesis by the organism to take place He suggests further that an excess of an amino-acid such as valine or leucine may inhibit growth by reason of a "blocking" effect on the synthesis of this compound or of one structurally related. The similarity in structure between the inter-related amino-acids points to some common reaction

The conclusion may therefore be drawn that the "indispensability" of a given amino-acid may be closely related to the presence or absence of other amino-acids, and that the effect of omitting two or more such compounds must be studied before definite statements can be made

THE CAUSES OF DEATH

From the beginning of next year the vital-statistical reports of most countries will tabulate causes of death in accordance with the revisions made by an international conference that met in Paris last October. The lists[3] this conference unanimously adopted (the detailed, the intermediate and the abridged) do not differ greatly from their predecessors The main object has been to bring them into line with current knowledge—particularly with regard to the infectious diseases—and the opportunity has also been taken to make some practical improvements suggested by experience under the headings of puerperal causes and of accidents Thus, under paratyphoid fever the type should be specified if possible; the hæmorrhages and toxæmias of pregnancy should be differentiated from those of childbirth and the puerperium; the modern importance of road accidents demands a clearer tabulation of them. An innovation of value is a suggested list of causes of stillbirth, for which fifteen headings are proposed Further studies are being made of a possible nomenclature for causes of morbidity, and on the thorny international problem of the classification of joint causes of death One of the difficulties of these revisions is, of course, the break they make in the continuity of the series of death-rates by causes; to overcome this—or at least to reveal its extent—the conference recommended that deaths in 1940 should be classified both by the old and the new rules Lastly, it rightly emphasised the importance of giving medical practitioners and students proper instruction in the principles upon which death certificates should be made out. After all they are the "producers of the primary products and without their intelligent coöperation in the scheme the most erudite "consumer" of statistics can consume to no purpose.

THE BURDEN NEUROLOGICAL INSTITUTE

The new neurological institute at Stoke Lane on the outskirts of Bristol was opened by Sir Thomas Inskip, one of the trustees, on May 12 The building stands in the grounds of the Stoke Park colony for mental defectives; and it has been paid for and endowed by Mrs. R G Burden, whose late husband, the Rev Harold Burden, founded the colony. The institute is, however, entirely autonomous, and will only partly concern itself with mental deficiency. Its management will be in the hands of a committee presided over by Sir Laurence Brock, chairman of the Board of Control, and its work will be directed by Prof. F L Golla, who until lately occupied the chair of the pathology of mental diseases at London University. At the opening ceremony Dr Golla explained that the purpose of the institute was to study the bodily substratum of mental diseases by the long and intensive study of a small number of cases Every method of approach will be used—clinical, physical (electro-encephalography), biochemical, endocrinological and metabolic. A team of workers trained in each of these branches has been appointed, and they will have the advantage of being free from the distractions of routine hospital or private practice. Epilepsy and its treatment will be one of the first problems to be attacked, and one of the two observation wards, each containing five beds and one cubicle, will be reserved for epileptics. The laboratories have been equipped generously but without undue lavishness, and include a metabolic laboratory with incubators, spirometers and gas analysis chambers, a physiological laboratory with kymographs, an electro-encephalographic room, a histological laboratory, a library and animal-houses The neurosurgical department, to which the Rockefeller Institute has contributed, contains a theatre equipped for brain surgery, and a special radiographic unit devised by Lysholm of Sweden The work, which will have the support of the Medical Research Council, will be conducted in coöperation with the Stoke Park authorities and those of the mental hospitals in the surrounding districts Dr. Golla hopes that the institute will become a national centre for the discussion and investigation of mental diseases.

SYPHILIS, PREGNANCY, ARSENIC

It has been asserted that pregnant syphilitic women tolerate arsenic well, and some have said that they run little risk of severe reactions to arsphenamine It has even been recommended that antisyphilitic treatment should be given to the prospective mother merely on an off-chance, purely as prophylactic for the unborn child. Ingraham,[1] like some others he quotes, applies a corrective to this attitude. He insists that in the treatment of the syphilitic woman during pregnancy, as in obstetric procedures her well being should take precedence over the health of the unborn child Further he finds that the statistical evidence in favour of the relative safety of arsphenamine treatment for the pregnant woman is not satisfactory From an analysis of his own and others' results, he concludes that pregnancy increases rather than decreases the risk of severe reactions, and the pregnant woman is by no means exempt from such complications as anæmia and encephalitis, he also notes that antisyphilitic treatment can aggravate or instigate toxæmia While agreeing that maternal antisyphilitic treatment has been one of the greatest advances of preventive medicine, Ingraham questions whether active arsenical treatment is desirable at all during pregnancy unless there is reason to think that the coming infant has a strong chance of being diseased

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[2] *Lancet* May 6, 1939, pp 1049, 1080

[3] *Bull Hlth Org L.o.N* 1939, 7, 944

[1] Ingraham, N R, *J Amer med Ass* April 22, 1939, p 153

AIR BORNE WORM INFECTIONS

At the U S National Institute of Health an inquiry has been made into the prevalence of infection with the threadworm *Enterobius vermicularis* in 2097 persons, believed to constitute a fair sample of the white population of Washington Eggs were found in no less than 41 per cent of examinations About two thirds of these were on boys between six and nineteen years old living in institutions, and among them the percentage of detected infection varied from 31 when only one examination was made to 57 3 when these numbered two to four [1] Experience suggests that there must be at least four examinations, not carried out on consecutive days, before infection can be excluded with any confidence The rest of those investigated were members of the general public, and a spot map shows that their homes were thickly clustered round the Capitol Though about half the infected had no symptoms, the high figures quoted are evidence that, in Washington, thread worm infection is quite a serious matter

The method of diagnosis which is the basis of these observations is the use and examination of the NIH swab devised by the late Maurice Hall [2] As is well known the threadworm does not oviposit within the bowel, so ordinary fæcal examination gives no indication of its incidence, but the female creeps from the anus and passes its eggs outside It is from the skin surfaces concerned that these have to be collected for examination, and after trial the best means of doing so was found to be the Cellophane swab or scraper This consists merely of a glass rod with rounded ends, about 10 cm long, thrust through a rubber cork of a size that suitably plugs a test-tube Over the end that will lie inside this tube for transport is angularly folded a 3 cm square of cellophane fastened by a rubber band The tip of this is used to scrape with outward strokes the anal ridges and furrows, the folded edges of the material picking up eggs and even worms, and, as the latter may migrate some distance before ovipositing, a considerable surface of skin should be covered For microscopic examination the material is pushed down the rod a little so that its tip becomes freed, it is then dipped in some stained decinormal caustic soda solution lying on a slide and cut off there The severed piece is spread out used side down, some decinormal solution is put on it and a coverslip laid over all The eggs, whether they are still adherent to the cellophane or have dropped on the slide, are readily seen through it under the microscope familiarity obviating the risk of mistaking flaws in this material for threadworm eggs

As to the way of conveyance capable of infecting so many persons over so considerable an area, Nolan and Reardon [3] in another paper of the same series show that it must be by air, so inhalation of embryonated eggs is presumably the means of infection They selected seven households because at least one member in each had a heavy infection, and they collected 271 dust samples from various parts of the rooms by passing over the sampled surface a camel hair brush moistened in water, the brush then being dipped into a few drops of decinormal caustic-soda solution in a well slide To ordinary standards five of the houses were clean and well kept Of these samples 92 per cent contained threadworm ova in all stages of development from tadpole to fully formed embryo, mostly in the latter stage, in about half the eggs the appearance suggested viability and in fifteen of them the embryos were motile The egg containing samples of dust were collected from all levels of all rooms, and their common presence in such sites as the top mouldings of doorways and ceiling lights shows that air currents had taken them there

The hygienic importance of the observation of Lentze,[4] that the threadworm eggs may be air-borne, is thus fully confirmed Moreover in the dust of a middle moulding of a bedroom door an egg of the whipworm *Trichuris trichiura* was present and presumably air currents had taken it there As to air borne ascaris infection,[5] Clayton Lane has collected further evidence for this [6] which leads to the conclusion that pit and borehole privies are active in this direction, this is not a plea for the abandonment of latrines in rural and backward communities, but a pointer to the urgent need of devising some better type In the nature of things privies will not prevent air borne infection by enterobius; treatment is needed for prevention, and this team of workers has tested the efficiency of various means of securing it, subjecting them to the strict diagnostic control of the NIH swab Their results, which are not yet published, promise to be highly significant

THE CONTROL OF DISEASE

In 1938 Dr Frederick W Price placed a sum of money in the hands of the Royal College of Physicians of Edinburgh for the endowment of a lectureship In delivering the first Frederick Price lecture on Monday last Lord Horder took as his subject the Control of Disease, and greatly interested his large audience He referred particularly to the stimulus to progress which came from the increasing value put on human life War, he said, stimulates advance in some aspects of medical science, but hinders, as at the present time, organised endeavour to improve the health of the community Women, he thought, are more in touch with the needs of the common people than are men, and he expects them to play a leading part in public health reforms of the future He ended his lecture, as he began, with the interesting speculation—Will it ever be possible to guarantee protection to the individual against all diseases?

Dr Walter Cannon, professor of physiology in Harvard University medical school, has been elected to the foreign membership of the Royal Society in recognition of his X ray investigations of the alimentary canal, his analysis of the mechanism and conditions of excitation of the suprarenal gland, and his work on the chemical transmission of impulses in peripheral nerves as shown by the sympathetic system

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[1] Cram, E B, Reardon L. *Amer J Hyg* (sect D) 1939, 29 17
[2] Hall, M C. *Amer J trop Med* 1937, 17 445
[3] Nolan, M O, and Reardon L *J Parasit* 1939 25 173
[4] See *Lancet*, 1938 2, 841
[5] *Ibid*, 1935 2 313
[6] Lane C, *Brit med J* 1939 1 23

SPECIAL ARTICLES

HEART-FAILURE

A Review Contributed by Invitation

BY K. SHIRLEY SMITH, M D Lond , F.R.C P.

PHYSICIAN TO CHARING CROSS HOSPITAL AND TO THE LONDON CHEST HOSPITAL

CARDIOLOGY has long been the battle-ground of speculative and conflicting doctrines. The terminology based on some of these doctrines has unfortunately outlived our faith in their truth, and certain expressions have become meaningless in the sense in which they are still widely used These discrepancies between theory and fact give rise to much confusion.

Among long-debated terms may be mentioned "back pressure" It was originally used to convey the idea that regurgitation of blood through the valves of the heart is the cause of the overfilling of the inflow (venous) side of the circulation, and that tricuspid *regurgitation is necessary before venous engorgement* can develop This overfilling (which is implied in the term "congestive failure") is now recognised as occurring quite apart from valvular damage or incompetence, and the expression "back pressure" thus becomes, at best, misleading Another example is to be found in the term "acute dilatation of the heart." This expression has been used to denote the state of intolerance of effort, with heart-consciousness and fainting, which may follow infections or strenuous or unwonted exertion It has been proved radiologically that there is no "dilatation" in these circumstances when the heart is initially healthy. If a patient with a diseased heart is subjected to infection such as influenza, or to mechanical strain as in paroxysmal tachycardia, rapid dilatation may take place; but in such cases the diagnosis *is* "*heart-failure.*" To label such a condition "acute dilatation" is comparable to calling uræmia "contraction of the kidney"

When changes such as hypertrophy arise in the heart—as a consequence, *for* example, of valvular disease—"*compensation*" is said to have taken place. This term may be regarded as convenient and sanctioned by wide usage. The expression "decompensation" should be discarded, since it means nothing more nor less than heart-failure.

DEFINITION

"Heart-failure" is the term used to denote inadequacy of the circulation as the result of disease or overburdening of the heart This condition is distinct from the circulatory failure of *pneumonia* for example, since the latter is of peripheral origin and according to recent work is *attributable* to increasing viscosity *of* blood resulting from loss of plasma *in* the lung exudate. Cardiac infarction provides a clear-cut example of combined cardiac and peripheral failure in which the primary fall of *blood-pressure due to* shock may help the crippled heart to tide over the phase of greatest weakness

MECHANISM OF FAILURE

Failure *of the* circulation is usually due to failing systolic power and output (hyposystolic failure). In this group may be placed the common extrinsic *obstructions to the* circulation—hypertension and *chronic pulmonary disease*, which overburden the left and right ventricles respectively. The failure [illegible] from chronic valvular disease or from progressive ischæmia of the myocardium also comes into this category. Failure of diastolic filling may produce *progressive slowing of the* circulation; constrictive pericarditis and pericardial effusions hamper the action of the heart in this way, and very rapid beating of the heart, as *in paroxysmal* tachycardia, *may lead* to congestion by the same mechanism, especially if the heart is in the first place damaged (hypodiastolic failure). In some conditions, such as thoracic deformity and thyrotoxicosis, a general overburdening of the heart is the cause of failure In *thyroid disease the myocardium may also* be poisoned.

DIAGNOSIS

The diagnosis of heart-failure depends on the recognition of symptoms, the most important being dyspnœa on exertion. Unlike the dyspnœa of *functional disturbances, organic dyspnœa* is *proportional to the exertion* and constant from day to day; moreover, cyanosis readily develops in association with it Signs of heart disease will usually be obvious *when there is congestive* failure, and the heart will always be enlarged, though the degree of enlargement may be hard to determine Increasing exertional dyspnœa heralds congestion. The earlier dyspnœic stage is sometimes referred to as "failure without congestion"

Congestion is not always discoverable by simple methods; it may be visible clinically, when for instance the liver and the veins in the neck are engorged; *but in other cases it affects only the lungs*, the engorged vessels in the hila being observed on radioscopy. A differential diagnosis may be necessary from certain conditions that may simulate (or accompany) *heart-failure*; the most important *of these are cirrhosis of the liver, anæmia, and pregnancy.* Obesity may obscure the diagnosis in so far as it prevents *satisfactory clinical* examination

PREVENTION OF HEART-FAILURE

Every patient with heart disease is faced with the ultimate development of heart-failure. A strenuous life leads more rapidly than a sedentary life to this termination , consequently the adolescent with *heart disease should plan a career* which is *mainly* sedentary, and the middle-aged patient with increasing dyspnœa on exertion should avoid all activities that cause breathlessness at the time or fatigue subsequently. A patient who is becoming *increasingly* breathless on exertion should lengthen the hours of rest at night and take a day or half a day in bed at each weekend Infections, such as influenza or bronchitis, *are* a serious menace, and the *development or* recrudescence of failure may often be traced to such a cause People with heart disease, therefore, should be specially guarded against infections. and treated with particular care if they *contract them*

Overburdening of the diseased heart through obesity is another prolific cause of heart-failure *Patients* should be protected from this risk by suitable dieting and regular weighing *Alcohol* is probably responsible for hastening failure in many cases The part played by anæmia should also be borne in mind Anæmia sometimes simulates heart disease which is not present, or it *may* aggravate existing heart disease and precipitate failure Pre-existing heart disease and precipitate failure. Anæmia never causes orthopnœa The danger of pregnancy to any woman with more than a *trivial* heart lesion is too well known to need emphasis

TREATMENT OF ACUTE HEART FAILURE

Acute failure of the left ventricle is a common development in the later stages of hypertensive heart disease, *also it often follows cardiac infarction* The patient gives a history of waking with urgent dyspnœa in the night In an attack he is found sitting up in bed, the anxious face is grey, chilly, and clammy, the struggles for breath continue often for half an hour or more The first essential in treatment is the *injection of morphine sulphate (gr ¼) Preparations* are then made for the administration of oxygen by nasal catheter Usually the attack abates after the use of morphia, but if not, or if the moist sounds in the *lungs increase, oxygen should be given Pro*longation of the attack or the development of acute pulmonary œdema in the presence of hypertension are reasons for venesection A pint of blood may be removed by introducing a French's needle (previously sterilised by heating in liquid paraffin) into the antecubital vein If this is not successful open dissection of the vein should be carried out and a scissor cut made in the wall after passing ligatures behind the vessel

Acute failure of the right ventricle may be a consequence of pulmonary infarction, it may also complicate pneumonia Urgent dyspnœa with thoracic pain or distress develops in association with cyanosis and engorgement of the veins in the neck Again morphia is the remedy, coupled *with efficient* oxygen administration Venesection may be beneficial, but, curiously, it is usually less effective than in acute left heart failure Coramine, 5 c cm injected intramuscularly or intravenously, is useful if respiratory failure supervenes

TREATMENT OF CONGESTIVE HEART FAILURE

The development of congestive heart failure signifies that the patient has entered upon a new phase in his malady Any previous regime or medication should be discarded and a new plan evolved Failure with or without congestion is an indication for rest in bed The duration of such rest will vary, *but in general* it will not be less than four weeks, indeed in some cases, fortunately uncommon, the first attack of failure leads to progressive deterioration and death A fairly warm environment (about 65° F) is required and the patient should lie in whatever position offers most comfort, *a propped up or sitting posture*, as in a cardiac bed is usually preferred

The diet in heart failure should be low for two reasons first to reduce the burden on the heart, and secondly to avoid progressive increase of weight The latter is a point very often overlooked, and I have many times seen patients who have been allowed to gain a stone or two in weight during a month or two of complete rest in bed The diet should be equivalent to about 1000 calories per day In the severer grades of failure the food will be chiefly liquid, such as glucose lemonade (made by adding ¼ lb of glucose to a quart of water with lemon) or other fruit juices milk jelly, junket tea, or milky coffee, small quantities of bread, fish, and milk pudding may be taken With improvement in the condition cereals, eggs, chicken, vegetables, and meat will be added, the heat value increasing to 1600 calories daily The principal meal should be taken at midday Fluids should total not more than 30 oz in the twenty four hours, and, if more than slight œdema is present the quantity should be reduced to 25 or 20 oz

USE OF DIGITALIS

Digitalis is as important a remedy in congestive failure as morphia is in acute failure Digitalis should be given whenever heart failure is diagnosed, irrespective of the rhythm, the level of the blood pressure, or the presence of aortic or other valve disease It must be given cautiously if there is heart block There is substantial evidence that digitalis has a direct effect upon heart muscle, but the benefits derived from its use in failure with normal rhythm do not rival the often astonishing improvement following its use in failure with auricular fibrillation Digitalis never converts fibrillation into normal rhythm, but by impeding the passage of impulses from the auricles to the ventricles it slows the ventricular rate, thus abolishing a wastage of weak contractions which are not strong enough to contribute to the circulation Digitalis, even in moderate doses, sometimes provokes fibrillation

In most cases of heart failure there is no great urgency for digitalis medication Complete rest without any medicinal treatment often brings progressive improvement In fact, when electrocardiography is contemplated and the patient is not seriously ill, it is best to withhold digitalis until the record has been made, to avoid the deformity produced within a few hours by this drug

Digitalis should be given by the mouth, except in special circumstances to be mentioned later The maximal benefit from digitalis is secured only when the drug reaches a certain concentration in the body, allowing for excretion, a greater total quantity will be needed with a gradual administration than when large doses are used to secure rapid digitalisation In general, a patient of average weight requires about 5 drachms of the tincture, smaller persons requiring rather less and heavier ones rather more In impending or early failure tincture of digitalis *20 minims or powdered digitalis 2 grains thrice daily* is a suitable prescription When rapid fibrillation is present in failure and no digitalis has been given for ten days or more, tincture of digitalis 1½ fluid drachms should be given followed by half a fluid drachm at six hour intervals until the heart rate falls to about 80, or toxic disturbances occur Thereafter the dosage is adjusted to maintain this optimal rate

In extreme congestive failure with fibrillation at very high rates, or in acute pulmonary œdema unrelieved by morphia or by venesection, intravenous therapy may be employed Digoxin 0 5 mg or strophanthin gr 1/100 is generally used as the initial dose Neither intravenous nor massive oral therapy should be considered if the patient has had digitalis during the preceding week, nor should they be considered in heart failure due to active rheumatic carditis or to thyrotoxicosis

It occasionally happens that intravenous injection is contra indicated while at the same time the patient vomits all preparations given orally, in such cases tincture of digitalis in doses 25 per cent greater than those by mouth may be given per rectum The dose is diluted with 4 oz of water and run slowly into the rectum at body temperature, the quantity for the day being given at one injection There are no indications for the subcutaneous or intramuscular injection of digitalis

DIFFICULTIES IN ADMINISTRATION OF DIGITALIS

Too often digitalis is withdrawn and the patient is deprived of a valuable medicine because of a single vomit or a headache If digitalis is needed a serious effort should be made to administer it Oral administration may be made impossible by early vomiting, and since this symptom is due to irritation of a congested gastric mucosa a change from the tincture to Nativelle's granules or to digoxin will sometimes overcome the difficulty. Seeing that the vomiting is due to the *failure*, and digitalis is necessary to combat this, it is essential to give it by one means or another. In several cases of this kind, in which previous digitalis made intravenous therapy inadvisable, I have used rectal infusions to procure digitalisation, and thereafter maintenance doses have been tolerated by the mouth. At times the local gastric effects of digitalis prevent daily administration even when there is no congestion It may then be found that the intended quantities can be given, provided that the doses are given on alternate days or missing every third day.

Late vomiting is due to digitalis intoxication and develops when quantities approaching or exceeding the full digitalisation dose have been given Other signs of digitalis intoxication will then be present—namely, slowing of the pulse-rate below 60 and premature contractions producing coupling of the beats on auscultation The drug should then be omitted for twenty-four or forty-eight hours and later resumed with the dosage halved.

SYMPTOMATIC TREATMENT

Restlessness and insomnia.—Apart from its rôle in cardiac asthma, morphia is of great value in alleviating restlessness in advanced failure and in giving sleep in spite of the pain or discomfort of this condition. Lesser grades of agitation, as in hypertensive failure, are often relieved by a mixture of potassium bromide gr. 10 with syrup of chloral 20 minims twice daily. For insomnia not due to pain potassium bromide gr. 15 with chloral hydrate gr. 15 given at night is useful Paraldehyde 2 drachms may be given orally or per rectum. There is no harm in moderate doses of the barbiturates, but these are sometimes not tolerated well by elderly cardiac patients.

Vomiting.—The means of dealing with vomiting due to digitalis have already been mentioned. I know no means of stopping the vomiting of coronary thrombosis, which when repeated bodes ill; isotonic saline should be injected subcutaneously. Vomiting in the elderly is sometimes invoked by morphia, and the use of this drug should then be avoided

Œdema.—Usually with fibrillation and sometimes with a normal rhythm, digitalisation brings a notable diuresis, and no further treatment in this direction is necessary. If digitalis does not relieve œdema, one of the mercurial diuretics will almost certainly do so. This remedy is so effective in cardiac anasarca with normal rhythm that it must be accorded an importance even greater than that of digitalis in the treatment of this condition An initial dose of 1 c cm. is given intravenously; 2 c.cm. may be given forty-eight hours later. As a general rule dosage should not exceed 2 c cm. twice a week. Ammonium chloride gr. 20 (in a gelatin capsule) thrice daily by mouth often augments the diuresis; if veins are not easy to find, suppositories usually give almost as good results; intramuscular injections are often painful I have seen diuresis masked by acute retention in the bladder, four pints being subsequently withdrawn by catheter. Mercurial diuretics should be given early in the day, so that the major effect will be concluded without disturbing the patient's sleep.

ACCESSORY MEASURES AND TREATMENT OF COEXISTING CONDITIONS

Paracentesis for hydrothorax, ascites, or pericardial eff[illegible] has largely lost its place in the treatment of heart-failure since the introduction of mercurial diuretics The same is true of drainage by acupuncture or by Southey's tubes. Venesection and oxygen therapy have already been mentioned in relation to their appropriate uses. The former is required chiefly in acute left or right ventricular failure, but also occasionally in advancing chronic congestive failure. Oxygen therapy may also be advisable in the last condition, for the increasing œdema of the lung interferes with gaseous exchange. In severe coronary thrombosis with pulmonary œdema oxygen by tent or nasal catheter is useful

Anæmia and obesity are common accompaniments of congestive failure and require treatment by iron and diet respectively. An important therapeutic principle in heart-failure is not to apply too many means of treatment at once; thus massive dosage of digitalis, paracentesis thoracis, and injections of mercurial diuretics are never to be crowded into twelve hours; the more urgent needs should take precedence. Lastly, treatment is not likely to be effective unless coördinated by unremitting clinical observation.

MEDICINE AND THE LAW

Osteopath Described as Doctor

AN osteopath who published testimonials in whic he was styled "Dr" was summoned on May 3 a Worthing on the charge of wilfully and falsely usin the title of doctor, implying that he was registere under the Medical Act Mr. J. Amphlett, prosecutin on behalf of the London and Counties Medical Protection Society, said that last October and Novembe Worthing was flooded with leaflets published by th defendant, Francis D Deacon. On one page it wa stated that he held diplomas of the British School o Osteopathy and the Taylor School of Bio-psychology elsewhere there were copies of letters from patients and also photographs, in which the defendant wa referred to as "Dr." Deacon For the defence it wa submitted that there was no case to answer A surgeon was a person who practised surgery, but a docto need not be a person who practised medicine; there was no offence against section 40 of the Medical Act if a man called himself "doctor"; no witnesses had been called to say that they thought the defendant was a medical practitioner The bench, afte deliberating in private, upheld the contention of the defence and dismissed the summons. It was, of course, a question of fact for the magistrates The Worthing magistrates took a different view from that of the Brighton magistrates who in 1936 fined an osteopath, also named Francis D. Deacon, £20 with £10 costs on an identical charge (see *Lancet*, 1936, 1, 683) On that occasion the evidence was that the defendant had described himself as "Dr" on his notepaper and on the plate outside his premis

Apart from the ambiguity in the popular use of the word "doctor," the legal position is reasonably clear In Ellis *v* Kelly (1860) the defendant, possessing a diploma from a Bavarian university, was acquitted on a charge of having wilfully and falsely used the description "Dr Kelly" because he possessed a genuine diploma On the other hand, in Andrew *v.* Styrap (1872) Andrews, who had bought a diplom from an American university and was taken to have known the diploma to be worthless, was convicted of having wilfully and falsely assumed the title of "M D." The two most recent decisions relate to the use of the word "surgeon" and not that of the less definite word "doctor" In Whitwell v Shakesby (1932) an unregistered practitioner had used the description "osteopathic physician and surgeon", this was held to be an offence against the Medical Act, the qualifying adjective "osteopathic" not having the effect of legitimating the illegal use of the words "physician and surgeon" Similarly in Jutson v Barrow (1936), where the defendant used the description "manipulative surgeon," the word "manipulative" did not save him In the Barrow case the defendant said he added the word "manipulative" in order to make clear to the public the fact that he was not a duly qualified surgeon Lord Hewart made some dry comments on this plea The use of the word "surgeon," he observed in conclusion, is, and is thought to be, desirable because of the well known and particular connotation and association of that word "The thing which makes the name 'surgeon' appear to be attractive and useful is precisely the thing which the Medical Act was enacted to prevent"

Admittedly the use of the word "doctor" in the Worthing case does not set up so clear an inference Patients call a man "doctor" rather loosely and there are other doctorates besides those of medicine It is fair to add also that the leaflets which formed the basis of the Worthing proceedings contained some purported exposition of the defendant's position in relation to the Medical Act, so that it could the less confidently be assumed that he was claiming to be registered under the act Nevertheless, just as Lord Hewart wondered why the unregistered practitioner wanted to use the description of 'surgeon" in Barrow's case, so one may wonder why the defendant in the Worthing case wanted to use the description of "doctor" In what was substantially an advertisement of his skill as a healer, could it be contended that the word "doctor" might have meant a doctorate of music or laws or of any other faculty than medicine? And was the word used for any other purpose than for the sake of its "well known and particular connotation and association"?

Lessons from Litigation

Cases in which dentists are involved have sometimes been spoken of as among the most troublesome encountered by the medical defence societies The annual report of the London and Counties Medical Protection Society (published this week) includes several illustrations of this kind of litigation Among other items of good advice tendered by the society to its members there is a warning against laxity in the keeping of records The legal advisers, it is stated, are often embarrassed, and sometimes a case is lost or a settlement has to be made at considerable expense, for want of a proper record made at the time The warning applies, of course, to medical as well as dental practice It is doubtful whether this important duty is sufficiently stressed in the schools Another point is the desirability of the dentist personally informing his patient if he has had the misfortune to break a tooth and to leave the root behind Where extraction is performed at a hospital, it is not for the practitioner to assume that a nurse or some other person will tell the patient what has occurred. The practitioner himself is responsible for the information being given and he is strongly advised to give it himself The same duty arises where a hypodermic needle is broken—an accident which figures not infrequently in the cases undertaken by defence societies The patient must be informed when a needle has been broken, and there should be a consultation with another dentist or with a surgeon as to the removal of the fragment Lastly, to mention a more homely aspect of dental experience, dentists who have to deal with a fractious child are advised of the unwisdom of recourse to physical correction However difficult the problem of the juvenile patient, physical correction involves risks which can hardly be justified

THE TAVISTOCK CLINIC

THE Tavistock Clinic held its annual meeting and lunch on May 15 Lord Alness, chairman of the council, said at the meeting that the past year had been full of difficulty, for much time and thought had had to be diverted to the formulation of an emergency plan, and finance had become increasingly difficult Nevertheless, the clinic could look forward to the future with confidence The importance of its educational work and research were more and more fully realised, and such an enterprise could never fail to find support in this generous land Lord Hollenden, the hon treasurer, said that the year had shown a definite financial improvement and, as a result of the production of "The Midnight Revue," the clinic could point to a surplus of about £1570 The actual maintenance figures without the £2000 thus raised showed, however, a deficit Expenditure had been reduced by rigid economy and by the charity of the medical staff in accepting the abolition of most of their honoraria Treatment interviews had increased by 2800, but patients' fees had dropped by £400 owing to the closing of the inpatient department The council had decided to sell the site purchased in the early part of 1930 for an inpatient clinic, and about £1700 would be required from the special appeals to balance the accounts for the coming year He appealed to subscribers to enter into covenants to contribute for seven years and thus enable the clinic to obtain the benefit of rebate of income tax Another way of helping was to form branches of the Friends of the Tavistock Clinic

At the annual luncheon, which was held at the Café Royal, Lord Alness said that with stout heart and head erect the council proposed to face the future and carry on The presence of Mr Walter Elliot the Minister of Health, was a great encouragement, and perhaps when the Government's cancer campaign had been successful the Minister would sponsor a neurosis campaign The presence of Dr D P O'Brien, of the Rockefeller Trust, symbolised the practical support and sympathy which the United States had for so long given to mental health work in this country The necessity for the clinic's work was greater than it had ever been, and would in war be accentuated a hundred times, but the clinic would not be found lacking in the performance of its duties

Mr ELLIOT declared that the mental health service was an integral part of the public health services of this country The legislature had recognised this principle in the Ministry of Health Act 1920, which placed the Board of Control under the Minister, and in the Local Government Act, 1929 which stated that the public health services included the services relating to lunacy and mental deficiency The stigma attaching to mental illness appeared to be diminishing In early mental treatment the outpatient clinic was of primary importance Nervous and mental disorders gravely impaired the efficiency and capacity of the population and caused much delinquency and crime A greater demand would be made for medical men trained in psychotherapy, and the clinic was performing an invaluable service in the training which it provided in this special branch of medical work

Dr. J. R Rees, the medical director, said that the clinic had taken all the precautions it could for war It would move to Hampstead and attempt to provide a service for private patients as well as for its ordinary patients From the published figures, the clinic arranged more medical time for the neurotic patients of the country than all the local-authority clinics in England and Wales put together He stressed the importance of thorough treatment for difficult cases and said there must be no slipshod methods of training for doctors who were to undertake psychotherapeutic work He suggested that outpatient psychotherapy should be made an approved benefit under National Health Insurance This would allow the employment of adequately trained doctors in local-authority clinics in every part of the country More medical training and better facilities must be provided both in the provinces and in London The clinic would go forward as far as it could with the support which it received

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PARIS

(FROM OUR OWN CORRESPONDENT)

BLOOD-TRANSFUSION IN WAR-TIME

Organised some years ago by Dr Tzanck, the central service for blood-transfusion in Paris has achieved high efficiency and has been a model for others in many cities Today the problem most in our minds is the supply of transfusable blood in time of war, and this means that we must study methods of preserving it The Spanish civil war, though it has shown the need for transfusion on a large scale, has provided no really new information In France Prof Jeanneney of Bordeaux was one of the first to recommend the storage of blood and it was at Bordeaux that a course for reserve medical officers was recently held at which three military surgeons, Colonel Sarrat, Major Giaccardy, and Lieutenant Thillard, outlined the situation in this country During active military operations, they said, reliance must be placed on stored blood, and it cannot be stored more than a fortnight This means that the preparations must be made outside the zone of military operations, and the blood must then be distributed to the proper points at the proper time—a delicate matter with important consequences. Sarrat, Giaccardy, and Thillard think that the solution is to set up an autonomous service as a branch of the army medical corps The three elements in the scheme are (1) the army consulting surgeon, who is kept informed of the military operations; (2) the laboratories in the interior which collect and prepare the blood; and (3) a coördinating service able to distribute blood by land and air. To secure efficiency in war the necessary machinery must exist in peace, and it could probably be organised with least difficulty by the Paris centre, headed by Dr Tzanck, which has most of the information needed for such a task

SOPHISTICATION OF FOOD

The Academy of Medicine, as adviser to the government, is from time to time asked by the minister of public health to give its opinion about chemical processes that manufacturers wish to apply to foods Each proposition is carefully investigated, often wi[illegible]ctical experiments, by the Academy's committee of hygiene, whose principal official is Prof Tanon of Paris, and the minister nearly always accepts the decision reached On April 18 the Academy agreed with its committee in rejecting a demand from North African fishmongers who want to dye shrimps with the aniline dyes naphthol-yellow or scarlet R It seems that African shrimps, though perfectly palatable and of good size, lose most of their pink colour when cooked and become rather dull Use of the dyes in question is permitted for certain sweetmeats and syrups, and it might have been supposed that the proposal would be adopted almost automatically. But there is certainly a tendency in the Academy to make a stand against the overwhelming flood of food sophistication This was evident once more on April 30 when a proposal was considered for the treatment of oranges with carbon bisulphide to get rid of *Mitilapsis gloveri*, a small insect inhabiting the outer peel The committee, after discussion, was willing to accept this process, though somewhat diffidently Sample oranges dipped in carbon bisulphide for 30 and 15 seconds were handed to the members, who could not help noting a rather repulsive smell The Academy, however, refused its consent and asked the committee to consider the proposition further—which means that it has little chance of success

SIMULTANEOUS IMMUNISATION AGAINST SEVERAL DISEASES

On May 2 the Academy heard an account from Prof G Ramon of the progress made in the fight against tetanus during the past fifteen years, in which he has played the leading part The main steps in his uninterrupted series of discoveries have been: anti-tetanus inoculation; mixed or associated inoculations; sero-inoculation, and sero toxoid therapy. Immunisation against tetanus by means of toxoid started with the work of Ramon and C Zoeller in 1926, and has now been widely adopted in France and elsewhere. For three years it has been compulsory in the French army, in which 800,000 inoculations have been performed, and similar methods are now used in the British army and certain others Ramon and Zoeller early showed the possible value of mixed inoculations, and in the French army as well as in many large undertakings it is now the routine practice to inject at one and the same time tetanus toxoid and diphtheria toxoid and typhoid and paratyphoid vaccine It has been ascertained—which was not at all obvious at the outset—that there is no such thing as competition between antigens On the contrary the separate immunities arising from injection of mixed antigens are not less but greater than those obtained by injecting them separately

Sero-inoculation—i e, simultaneous injection of serum and toxoid—is intended to give a wounded patient, never previously inoculated, the benefit of an immediate passive immunity and future active one This also is being used in the French army The sero-toxoid treatment of confirmed tetanus consists in the single massive injection of serum followed by several doses of toxoid The process is curative and prevents recurrence

Immunisation against tetanus has also been applied to animals—particularly horses—and has eliminated the formerly frequent cases of this disease among army horses The most remarkable consequence of inoculating horses however has been the quicker obtaining of therapeutic serum with a higher antitoxic power. Ramon's latest achievement is the preparation of a serum with a very low protein content which is so rich in antitoxin that it may be called a concentrated solution of it Clinical tests have been described by Sohier and Kourilsky in the *Bulletin de la Société Médicale des Hôpitaux de Paris* (1939, Nos 12 and 13) Serum reactions—the nightmare of the practitioner—will, it seems, soon be a thing of the past

A number of associations in France give help to doctors who are ill or to the widows and orphans of medical men Some of them embody insurance contributions while others are purely charitable There has long been hope that some day it would be possible to merge these organisations in the interests of efficiency A step in this direction has at last been taken by the creation of a central organisation with the principal object of preventing unscrupulous beneficiaries from getting help from several associations It will also endeavour to confine some of these bodies to particular functions

Another subject lately brought before the Academy of Medicine, but not much mentioned in the press, is alcoholism among military air pilots Probably it is not only in France that excessive drinking is apt to be a matter for boasting among the young men in service aerodromes Dr Milian was able to put before the Academy figures showing the usual monthly bill of some of the pilots at the canteen—and they were astonishing He thinks something should be done about it

The Assemblée Generale de Médecine Française, which is our national association of practitioners, has been considering the treatment of cerebrospinal fever All the local sections agree that we are in a period of epidemic silence They all remain faithful to serum—type-specific when possible but otherwise polyvalent It is clear however that serum is not always entirely satisfactory and the tendency is to use sulphonamides in addition Objections have been raised but on the whole medical opinion here is favourable to this procedure

NORWAY

(FROM OUR OWN CORRESPONDENT)

LEGAL RESTRICTIONS ON PSYCHO ANALYSIS

In an address last year on the use and abuse of psycho analysis in Norway (see *Lancet*, 1938, 2, 103) Prof Ragnar Vogt hoped that it would prove possible to curb misguided psycho analytical activities by legislation A government order, technically known as a "Royal Resolution," made since he spoke lays down that doctors must not employ psycho analytical methods of examination and treatment without being specially authorised to do so by the Department for Social Affairs Further, no one who is not a Norwegian doctor may use psycho analytical methods unless he has received permission from the Crown In doubtful cases the country's medical director must decide, after a report from the Faculty of Medicine whether a given examination or treatment is to be regarded as psycho analytical or not The measure defines psycho analysis as any examination or treatment which is continued regularly for a considerable time and whose object is to clarify, interpret, or otherwise influence unconscious mental processes

With the necessary goodwill the order should succeed in clipping the wings of laymen whose amateur flights as psycho analysts have of late done so much to bring ridicule on themselves and their victims More debatable are the limitations it imposes on fully qualified doctors Consciously or unconsciously, every doctor in his practice invokes the aid of psychic factors in dealing with his patients, and it may prove difficult always to draw a hard and fast line between mental treatment which is and is not psycho analytical The principle of not allowing a fully qualified doctor to practise his profession in any sphere he pleases, irrespective of his competence in that sphere, is by no means new in Norway Thus, a law passed in 1927 says that on the recommendation of the Faculty of Medicine and the Ministry of Health, the Crown may rule that methods of examination and treatment which may be dangerous to the life or health of the patient, and which require a special training beyond the limits defined for the state's diploma in medicine, must only be practised by doctors who have been specially authorised by the government This means that the state diploma in medicine no longer confers on its holder the right to practise in those branches of medicine which have grown into potentially dangerous and highly technical specialties—for example, radiology It says much for the scandalous character of amateur psycho analysis in Norway of recent years that this principle of specialties only for specialists has now been applied to it

Panel and Contract Practice

New Regulations

APART from minor changes designed to give formal authority for recent alterations in practice, the principal points of interest in the Medical Benefit Amendment Regulations, 1939, are as follows —

1 An insured person will be able to secure acceptance by an insurance practitioner by presenting a medical card (as at present) or by means of a form of application for a medical card, to be provided by the insurance committee for the purpose This will permit practitioners to accept persons who apply without a medical card instead of having to tell them to obtain the card and then bring it for signature It must of course be remembered, however, that the patient will not be placed on the practitioner's list unless he is eligible for acceptance—i e he must be entitled to benefit and must not already be on the list of another local practitioner So the safer way of accepting will still be by the signature of a medical card, and a practitioner who accepts by means of the form will have to provide any necessary treatment forthwith Another point to be borne in mind is that the form will have to be properly completed before submission to the insurance committee, particularly as regards the name of the approved society and the membership number

2 The period within which application may be made for the return of fees paid by way of deposit, or for the withdrawal of accounts rendered under the terms of service may be extended from the existing fortnight to a month if the insurance committee are satisfied that the cause for the failure to make application within a fortnight was reasonable

3 A practitioner will not be required to attend a woman within 14 (hitherto 10) days after labour in respect of any condition resulting therefrom

4 The list of prescribed appliances is now to include "catheters rubber suprapubic and rubber shields for use therewith "

5 The pharmaceutical committee will no longer be concerned in the question as to whether an article supplied by a chemist under the regulations to an insured person was a drug or appliance forming part of medical benefit This is the logical sequence to the new contract with the chemists under which they are to be paid in full for whatever they supply to insured persons on scripts issued by insurance doctors

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN AMATEUR JOURNALIST

III

NOBODY maintains that selection of medical practitioners by the present method of examinations is entirely satisfactory. It is recognised that the "chronic" may subsequently demonstrate the possession of qualities which make him an ideal doctor, qualities which no practicable system of examinations could possibly have revealed; qualities which indeed the present system might withhold from him the opportunity of revealing. The good examinee, on the other hand, is sometimes an unworldly perambulating encyclopædia, hopelessly deficient in those essentials of character which determine success in practice; and yet what examiner, *however bold, ruthless, and psychologically equipped,* would be held justified in presuming his unsuitability to qualify? Some sort of system of selection and rejection there must be: some attempt to guarantee knowledge *if not skill* The chief, indeed the only, solicitude is to protect the public. And whatever one may say in depreciation or condemnation of the examination system, the plain fact remains that nothing more satisfactory can be substituted and that no stimulus towards the study of a subject surpasses the realisation of the subsequent examination ordeal. I myself would warmly welcome an examination once or even twice annually as a preventive from shirking the difficult or the uncongenial, a sentiment which I do not suppose would receive much support. But perhaps I am a "good examinee."

* * *

Students believe, in greater or less degree, that an examination is a deliberate contest between adversaries both out to employ their best and worst. Such an opinion is embodied in the familiar phraseology, "they ploughed (spun, floored, biffed, bumped, pipped) me," and the candid admission of a battle on his side in the triumphant expression of the examinee's "*I biffed them.*" The real sportsman admits that he "came down," presumably employing the metaphor of hurdling and regarding the examination as a fair obstacle which he had failed through his own fault to clear.

I am referring of course to qualifying examinations in which the criterion is a pass standard. The situation is different in the case of higher or special diplomas in which, I take it, the examiner is entitled *to try to* discover what the candidate does not know. In the qualifying examination I am perfectly sure that, notwithstanding the impressions of certain candidates to the contrary, nearly all examiners are anxious to find out what the examinee *does* know: their impulse is to pass if they can, not to plough

* * *

Now admittedly the personal element can never be eliminated. Variation in reactions can be demonstrated by presentation of the same material to a number of examiners A special investigation has even revealed evidence of considerable variation in the same examiner on different occasions, the material and the examination paper remaining constant. Nor is that surprising. Any honest observer must recognise the tendency to project his emotions, to isolate his prejudices, his likes and dislikes, to apportion the blame rightly due to himself and that which may be justly allotted externally, demands no little judgment. I have observed that the characteristics which I like in an examinee have on occasion been precisely those to which a co-examiner has objected. Take as an example the irritating effect which fluency and expansiveness in answering a paper will have upon an examiner who is naturally taciturn, relatively inarticulate, and partial to the staccato log book type of reply with complete absence of padding But our system of arrangement by pairs in the correction of papers and in the conduct of the rest of the *examination appeals to me as extraordinarily fair* Since a considerable number of examiners is involved a good average must be struck and I should judge that the candidate receives the benefit of any doubt, and not *infrequently some benefit when there is no doubt*

* * *

Much has been said and written upon the importance of general education as an introduction to the study of medicine and far greater authorities than I have debated and differed upon what should be demanded, what is unnecessary, and to what extent this preliminary education influences the subsequent career, particularly perhaps in the matter of classics And far be it from me to say whether it is important for a future doctor to acquire the rudiments of literary style and if he will be a better practitioner because he has learned to arrange his knowledge in an attractive form. Doctors are notorious for the *illegibility of their handwriting* This relates particularly to prescriptions, and provides scope for a good deal of rather feeble witticism Is it perhaps the case that much of our scrawl is an instinctive or deliberate attempt to conceal certain defects in our education? Our prescriptions are often a ridiculous mixture of English and inaccurate Latin, savouring of the absurd jargon in the menu of the cheap restaurant with its preposterous attempt to twist English into imperfect French If the scrawl is bad enough, nobody can be quite sure that the spelling and construction are wrong and even the uncharitable are generally too ignorant of technicalities to probe very deeply. Is it fair to suppose that the examinee with a slovenly mind as represented by his examination papers will be generally slovenly in his professional relationships when he *goes into practice*? Well, a tetchy fastidious examiner would be confronted with only too much material for the casualty list if he allowed this prejudice to predominate. I will not refer merely to illegible handwriting nor to incorrect spelling, principally because if I quoted some examples I have collected I should simply be disbelieved. But how ought one to assess the mentality of an examinee who writes that "Women are in general more often pregnant, hence *B.O.O* is commoner in women than men"? Or—in reply to the same question, "This is a well-known complication of pregnancy, and the patient is often a young previously healthy boy" *Le style c'est l'homme,* but can we picture the future doctor from the following? "Everybody knows what he ought to eat from reading the daily papers" "This drug will do the trick" "The systolic murmur in such a case cuts no ice" "The modern young woman lands at work just before the boss arrives" "Be sure the teeth are O K"

"If I found anything wrong, I would set to work and treat it" was the confident but uncommunicative comprehensiveness of one candidate "She cannot take any food and vomits any food she takes" Is an examinee entitled to make the marker giddy in his attempt to understand? And "the neurotic can be greatly helped by help" has doubtless some germ of wisdom in its assurance, but it is analogous to the type of answer "Syphilis may be the cause simply because it may cause anything" Still more frank, though hardly likely to appeal to an examiner's generosity, is "This as a cause is not worth mentioning but is brought in for completeness"

A craving for colloquialisms is perhaps mainly responsible for slovenliness and especially for our medical slang, about which I hope to blow off steam next week. "The colon, so to speak, becomes tired of asking" The charitable examiner who understands about constipation can realise what this candidate has in mind and passes on, though perhaps he might be excused this elementary instruction when in order to emphasise the value of sufficient liquid the rhetorical question is put to him, "Who ever heard of a costive brewer?" A similar reminder that the examiner must not be credited with much understanding is conveyed by the answers that "walking is the best of all exercises because it is the cheapest" and "you will get this from the history, unless the patient is the inmate of a lunatic asylum"

We certainly had our lesson in fundamentals when we set a question on scabies "Scabies is due to a bug called Ascaris, the appearance is characteristic and the animal has six legs" "The poorer classes are not over active in the pursuit of cleanliness" "Often there is a history of sleeping with someone who itches" "The female of the species is, as usual, more deadly than the male" "The removal of clothing at night seems to be the signal to the parasite for a nightly prowl" "In fortunate cases the acaris is seen at the end of the burrow" "Sulphur is able to do its job on the acaris"

It will not do We must make up our minds not to expect too much I cannot believe that the crude literary simplicity of most examinees is a good index of their knowledge or of their efficiency, although nothing would be lost by a course of instruction in accurate and felicitous expression

* * *

So much for the papers and now for the vivas—a test not merely of knowledge but of presence of mind and courage Most examinees deplore that they are at their worst in a viva, that they experience a nervous inhibition which in a few distressing instances may lead to complete mental paralysis or to a curious compulsion to say the wrong thing when the right is known, to recognise the perversion and yet be helpless To a select few, the very sight of an examiner and all the appurtenances of his craft is sufficient to act as a stimulus and call forth the very best and almost a premium The personality of the examiner is naturally a very important factor The bluff geniality of one may be all that is required for the creditable performance of a nervous candidate who would go to pieces if confronted with the forbidding exterior and unintentionally harsh manner of another Of course what the examinee does not know is that the first type may be a veritable wolf in sheep's clothing and that his less amiable colleague, who has torn the candidate to shreds, may be as generous when it comes to marking as he is offensive in conversation

To what extent is an examiner in a position to assess the character and therefore the capacity of a candidate by means of this ordeal? I have heard it argued that little mercy need be shown in respect to failure in this hour of trial, since on all occasions of emergency, when coolness and presence of mind are of vital importance to a patient, the sufferer may equally be found wanting A plausible argument, but one which is not accepted by those who submit that the circumstances are unique and have no bearing upon general reactions in moments of stress where personal interests are not paramount From this we understand the advantage of those examinations which are conducted by an internal and an extramural examiner The former's intimate acquaintance with a candidate may enable him to assure his colleague that this isolated occasion is not a fair criterion On the other hand, the external examiner will have a stabilising influence, preventing undue consideration through natural partiality, and even, perhaps, on rare occasions, a prejudice which close association may have engendered

Experience of conducting examinations speedily persuades one that its conscientious performance is a laborious art not easily acquired: probably it is never acquired by some, whatever their academic attainments Doubtless a better system could be evolved, but this would have to be at the expense of a great deal more time and trouble than is practicable For whilst we may accept examinations as a reasonably good test of ability, only the elaboration and application by specialists of intelligence tests would be a more adequate guide to capacity

So, on the whole, we had better carry on

* * *

It may be not unfairly contended of the medical curriculum that the various lectures, demonstrations, courses of instruction and so on have been formulated in order that some attempt should be made to ensure that the ground has been covered In this respect the student may be compared to the tourist who has been conducted over a scheduled programme and has grimly accepted it whether he enjoys it or not, whether or not he retains any memory of the places visited, or whether he is left with a hazy, confused, impressionistic representation of many sensations and stimulations and a mind a muddle of ill-digested facts Unhappily too, by some impish freak of mental valuation, the things that have stuck may be the least important of all.

There is at least one element in the curriculum that is open to adjustment lectures, whether systematic or clinical. That adjustment is pertinent is indicated by the great variability in procedure at medical schools, with, at one end of the scale, as large a number of lectures as the time of the student can permit, to none at all at the other The systematic lecture is, I suppose, a relic of medieval instruction when the spoken word was the chief and on many occasions the only form of communicating thought before the world was deluged with textbooks The late Charles Barrett Lockwood, a teacher of exceptional acumen, remarked that "the best text books are the patients in the wards and casualty department" Formal lectures to compete successfully must have a better raison-d'être than generally obtains.

For what memory have we carried away, we who were under obligation to the old régime? We attended at first with a restless anxiety to acquire something to enable us to qualify at the earliest possible time; moreover, attendances were to no small extent influenced by the need to be signed up for the examinations In the hope that all the time thus spent should not be wasted, we sometimes "took notes" with the result that at the end of the course we had compiled another epitomised textbook; a poor return for the time sacrificed, being an epitome which we could have prepared for ourselves at leisure and far more satisfactorily For although the fact is obvious enough, it is not always realised that a first-class physician or surgeon is not necessarily a good lecturer any more than a good lecturer is necessarily a first-class clinician. And what a dreary business the average systematic lecture often turns out to be Without inspiration, originality, or enthusiasm the lecturer dictates some stereotyped orthodoxies in a more or less halting fashion according to his natural gifts of elocution It is no exaggeration to say that there are lecturers who make no attempt at anything more than reading aloud from a textbook so that, in all seriousness, a gramophone might equally well be employed. The sole defence of this type of lecture is that another channel to the sensorium, the auditory, is opened up and that some people can learn better when the higher centres are approached by this route.

* * *

This is not to condemn the whole principle of lecturing. The right type of man appeals to his audience as only a living force can appeal, carrying into his exposition a breath of his personality which endures for the lifetime of his students He should supply something out of his special experience, something which cannot be acquired by reading or even by seeing patients The lecturer is there not to save men from taking trouble but to show them how to take trouble, and perhaps to save them from wasteful and unnecessary trouble.

I should be hypocritical to pretend that although very fine lecturers are to be found in most medical schools, they exist in plenty. So many factors must be satisfactorily combined to meet all requirements The man of ripe experience and good clinical judgment may fail miserably before the ordeal of giving expression He may lack fluency, which is after all a peculiar faculty, not necessarily having anything to do with knowledge. He may fail in his delivery to "get it over," more especially as a touch of the histrionic is a sine-qua-non His voice may be unpleasant or even indistinct to the degree of inaudibility He himself may bitterly deplore that he is casting pearls before swine more truly he is endeavouring to force an alimentary canal adapted to a generous well-selected dietary to digest and absorb a foodstuff which is unpalatable to begin with and unassimilable in the form in which it is presented.

More and more is teaching at the bedside approved as the most attractive and valuable form of tuition. But the lecture still has its advantages in its proper place and in its proper form It seems a pity that the services of a really great lecturer should be comparatively restricted When possible, they might be utilised by students from several schools in the metropolis A good lecturer can talk to 500 as well as to 5; better, of course, since he will have the greater stimulus of a large audience Above all, attendance at lectures should be optional, though registration should be used as a guide to appreciation. It will soon be evident which lectures are worth continuing; the student is a safe guide.

* * *

Yet this is not the last word. Those who maintain that the profession has by no means reached saturation may overlook an essential circumstance—a difficulty in training at the bedside One observes in hospital journals a recurring grumble that already there are far too many students. The inconvenience may not be experienced in the preclinical subjects provided that there is adequate laboratory accommodation and large enough lecture theatres If necessary, classes can be duplicated, even triplicated But an unrestricted admission to the bedside is impracticable. It is the considered opinion of those best qualified to advise that the optimum number on a ward-round is 6, with 10 as a maximum. I know of no more exhausting task than to demonstrate to a larger number whose attention must be held, not to mention the impossibility of subjecting a patient to a protracted number of examinations; and only individual approach to such an opportunity makes a clinical appointment of value, a value upon which some schools justly pride themselves and which they ensure by a rigid restriction of admissions.

If the present alleged overcrowding continues it may mean a recrudescence of systematic lectures They would be regarded as a poor substitute for practical instruction, and would obtain only the grudging approval of being better than nothing. But perhaps, if their necessity was accepted, cultivation of the art of lecturing might be stimulated

THE LANCET 100 YEARS AGO

May 18, 1839, *p* 280.

From a note on a lecture on the moral education of children by Dr Felix Voisin.

In the first class M Voisin places those whose intellectual developments, being primitively stunted, may be described as the "poor in mind"

In the second class are comprised the *spoiled children*, or those who, born with the usual advantages of Nature become vitiated by an early and ill-directed education,—children who, when grown up, form the bulk of those who are expelled from colleges, who constitute the pests of ordinary schools, who are sent to sea, or who are confined in houses of correction, at the instance of their nearest relations

The third class comprises those to whom Nature has been lavish of her gifts Precocious alike in the power and extent of their talents, they may truly be said to be *mediocre* in nothing, and who become great men or great criminals according to the circumstances under the influence of which they live Who can estimate the irreparable losses which society is constantly sustaining on this score? How small the number of teachers who divine those intellectual superiorities; or who, when they have to deal with them, know how to deviate from their uniform methods of instruction!

In the fourth class he places children *born of insane parents, and having an inherent tendency to the same calamity,—children who, without a special treatment, are liable, as experience has shown, even although no indication of insanity may be manifested for a time, to be struck, without any apparent external cause, with the malady of their progenitors, at or near the age at which the latter became insane*

LETTERS TO THE EDITOR

MEDICAL INSPECTION AND DEAFNESS

SIR,—Social reforms on behalf of deaf people have been delayed largely because it has been difficult to obtain a reliable estimate of the number of such people It has been brought to my notice that there is a present opportunity of obtaining information on this point because some municipal authorities are starting superannuation schemes for their employees, and are arranging preliminary medical examinations The time available for this examination is usually short, so that it is not practical to suggest that exact tests of hearing should be made on each applicant But useful data would be obtained if a questionnaire could be filled in A suitable form is appended, duplicated copies of which can be obtained from me I should also be interested to receive completed sheets for statistical analysis

It is hoped that in cases of defective hearing the examining doctor would whenever possible inspect the ear with an auriscope as well as taking a medical history This would indicate in how many the deafness might be attributable to wax, and also give some idea as to what proportion of cases were due to middle-ear disease, which should be preventable

I am authorised to say that the matter has the interest of the medical committee of the National Institute for the Deaf, and of the hearing committee of the Medical Research Council, of which I am a joint secretary

I am, Sir, yours faithfully,

PHYLLIS M TOOKEY KERRIDGE

University College, London, W C 1, May 10

QUESTIONNAIRE

Name .. .. Age .. .. Work .. ..

Please answer the following questions with Yes or No.

(There is no hurry; if you do not understand what is meant ask for an explanation)

1 Do you consider that your hearing is perfect in both ears ?

2 Do you consider your hearing to be perfect in one ear only ?

If so, which is the better, the left ear ?

or the right ear ?

Answer the following questions with regard to the better ear, if your ears are not equally good

3 Do you find it difficult to hear at the cinema ?

4 Do you find it difficult to hear when several people are talking together ?

5 Do you find it difficult to hear one person if he is talking to you in an ordinary voice ?

6 Do you find it difficult to hear one person even if he speaks loudly ?

7. Do people have to shout in your ear to make you hear ?

8 Can you hear your own voice ?

9. Can you hear the noise of traffic in the street ?

Result of examination of ear. (This part of the form will be filled in by the doctor.)

	Wax.	Tympanic membrane	Special notes.
Right ear ..			
Left ear ..			

(If the patient uses a hearing-aid the questionnaire should be answered twice, firstly with regard to his natural hearing, and secondly as to what he can hear with the instrument)

EQUIPMENT OF INDUSTRIAL CLINICS

SIR,—In a brief account (*Lancet*, April 29, p. 1016) of an address given by Dr. Philip Ellman to the advisory medical committee of the Industrial Welfare Society he is reported to have stated that "as a preventive measure all large factories should have on their staff a medical officer with adequate facilities, including X-ray apparatus" To the first part of this statement no exception can be taken, but to state that every large factory should be equipped with X-ray apparatus for the purpose of detecting early tubercle suggests that Dr Ellman does not fully appreciate the proper sphere of industrial medical services

If any industrial medical officer were to set up a system of examination and equipment specifically to detect the early stages of pulmonary tuberculosis, a disease which cannot be regarded as occupational, he would needlessly be overlapping our present health services Only in exceptional cases can the cost of an X-ray apparatus for chest work be substantiated by an industrial medical officer, for example, where there is a specific occupational lung hazard, or in the rare instances where no X-ray facilities are available at all in the locality A very proper place in the prevention and detection of tuberculosis does however belong to the industrial medical officer in that he can refer to the right quarter many doubtful cases of vague ill health reported from the factory, and can also assist in the safe rehabilitation of suitable ex-tuberculous patients under proper control. But X-ray and specialist diagnosis of such a disease is not either within his competence or proper sphere

With the policy of extension of medical services in the factory one cannot but be in agreement, but needless expenditure and uneconomic and irrational development can do nothing more than antagonise the employer who already is contributing financially to the health services of the community by National Health Insurance and hospital contributions, and who feels, reasonably enough, that the specialist detection of a disease such as tuberculosis is outside the sphere of industry. I am, Sir, yours faithfully,

D. STEWART

I C I Metals Limited, Kynoch Works,
Birmingham, 6, May 10.

MORPHINE INJECTION AT FIRST-AID POSTS

SIR,—Should an emergency arise first-aid and mobile stations may suddenly find themselves almost overwhelmed by an influx of casualties The number of skilled workers available at each post is necessarily limited; hence it is essential that all voluntary assistants should be trained to administer morphine by hypodermic injection

Safety and reasonable accuracy of dosage are important, it must be made easy for a relatively unskilled person to measure, and administer rapidly, effective doses of morphine without any risk of accidental overdose even when working in adverse circumstances and almost, if not quite, in darkness These requirements rule out the use of ampoules and tablets. The following scheme has been evolved to answer the requirements, and seems suitable for general adoption It depends on the fact that new Record hypodermic syringes are now graduated in cubic centimetres as well as minims and, though they vary slightly amongst themselves nearly a contain about 1 5 c cm when completely filled Any which fail to conform reasonably closely to this capacity can be rejected

A solution of morphine tartrate or sulphate containing ¼ grain in 1 c cm (16 2 grammes per litre or 112 grains per pint) is prepared and distributed in rubber-capped bottles each containing 25–30 c cm

If a solution of morphine is used, containing ¼ grain in 1 c cm, the syringe when filled to capacity will contain about ⅓ grain (more accurately ⅜) To administer ¼ grain the piston is set to the top of the graduated portion (whether the 1 c cm mark or 20 minims mark matters very little, for the difference is small) If the syringe is filled completely the dose administered is ⅓ grain or a very little over Unless more than one injection is given it is impossible to *administer a lethal or dangerous dose* First-aid workers and nursing assistants can be instructed to give ¼ grain to women and ⅓ grain to men

Rapid and accurate measurement of ¼ grain is facilitated by painting a ring with cellulose paint *between the 1 c cm and the 20 minims mark*, and preferably also by setting the piston at the 1 c cm mark and filing a notch in the handle just above the cap If the latter arrangement is used the notch can be felt with the thumb or finger nail, and with a little practice the syringe can be either filled or set to administer ¼ grain with considerable accuracy even in darkness

Pistons of syringes are not interchangeable Syringes with pistons which leak or are liable to jam are a nuisance It is most desirable that each syringe should be lettered or numbered on the head of the piston and on the metal nozzle for purposes of identification Needles should not be too fine, and should preferably be short rather than long They are then easier to insert into the rubber capped bottles. *If the bottle is always held strictly upright* when inverted there is much less likelihood of air entering the syringe if a short needle is used

In order to avoid danger from the receipt of two doses, those who administer injections should carry labels bearing the word "Morphine" in large type and should be instructed always to tie one of these to the patient before passing on to the next It is well that a note of the dose and time of administration should be written on the label, but this may not always be possible If standard dosage of ¼ grain *for women and ⅓ grain for men becomes generally* accepted the necessity for such a note disappears Only where an unusually large dose has been administered is it essential to make a note

I am, Sir yours faithfully,

P HAMILL

London, W 1, May 13

THE TREATMENT OF CARBUNCLES

SIR,—On p 157 of the 1939 (posthumous) edition of Kanavel's "Infections of the Hand" reviewed in a leading article in your last issue I find the following statement about carbuncles –

Treatment These cases are best treated by a crucial incision the ends of which extend beyond the edge of infiltration and by incisions undermining the skin, so that it may be raised from the underlying tissue

Surely this advice and treatment are not in accord with the most modern teaching for this complaint as carried out in Great Britain by recognised authorities • Kanavel is of course dealing with the hand but is his treatment applicable to carbuncles of the neck or elsewhere? He makes no mention of magnesium sulphate packs or other conservative measures Of the crucial incision he writes on p 158 "I have had occasion *to use this method in a* large number of cases, and whenever the technique described has been faithfully carried out the result has always been satisfactory" I cannot help doubting whether this has been the general experience

I am, Sir, yours faithfully,

Streatham, S W 16 May 15 W H COUPLAND

DISPLACED RIBS

SIR,—I read with great interest Dr W A Ball's article in your last issue To some, however, its main interest lies in the sidelight which it casts upon the psychology of our profession because here, innocently set out I am sure, is pure unadulterated osteopathic technique Let us, Sir, be honest and, before the technique has crept into the "orthodox" medical textbook, give credit where this is due, because I have no hesitation in asserting that the manipulations described in that article are items culled from an extensive spinal manipulative procedure elaborated by the osteopath, and that, so *far as this has penetrated to the medical profession* here, it has been imported from, and learnt on the spot in, America

Even more striking is the description of the rib displacement, conforming, as it does, accurately with that of our old friend, the "rib lesion"

I am, Sir, yours faithfully,

London W 1, May 15 ROBERT STANTON WOODS

INTRODUCING HYPERNESIA

SIR,—The International Conference on the Standardisation of Hormones has given the coup de grâce to "gonadotropic" a word already rendered moribund by Dr A S Parkes I have not the *strength of a Parkes, who with one letter*[1] *can kill* a word already recognised throughout the world, but I would dearly love to strangle in its youth the horrid hybrid "hyperinsulinism," a word as ugly as it is misbegotten I would supplant it by "hypernesia," which is correctly formed and so much more euphonious It has an adjective almost ready made in "hypernesian" and should come easily to the tongue of those who remember from their youth that Polynesia is the place of many islands

I am, Sir, yours faithfully,

RAYMOND GREENE

Upper Wimpole-street W 1, May 15

DAYLIGHTING STANDARDS IN WORKSHOPS

SIR —Nearly all of us spend the greater part of our working life in daylight but whereas the subject of artificial lighting has received considerable attention in recent years, that of daylighting conditions has *been sadly neglected The Government's report of* last September on Lighting in Factories emphasised that bad lighting was responsible for increased accident rate, damage to eyesight and health, insanitary conditions reduced discipline and diminished output and quality of work

The report discussed minimum legal standards for artificial illumination, but refrained from laying down any rules as to what represents adequate daylight This means that an employer who wants to improve his lighting can find exactly what to do with regard to artificial lighting, but there is nowhere he can look for constructive recommendations as to architecture type of glass and other materials to be used for daylighting

The report deserves the warmest praise for drawing attention to the evils of bad lighting but the work of its authors will be wasted unless it is followed by concrete suggestions May I express the hope that attention will be given to this matter without delay? There must be many employers who are unknowingly inflicting inadequate daylighting standards on their workpeople.

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[1] Parkes A S, *Nature Lond* 1938, 141 36

I am, Sir, yours faithfully,

G B. J Athoe,

Secretary, Incorporated Association of Architects and Surveyors

London, S W 1, May 13

CLINICAL SENSE AND CLINICAL SCIENCE

Sir,—Prof. Ryle's oration to the Medical Society of London, published in your last issue, will be of great interest to students of medicine, whether graduate or undergraduate. But there is an aspect of this subject which he only mentions by implication and which is I think of importance: that is the method of presenting his "clinical sense" that the teacher employs It is this that so often forces the student to decide whether some clinical teaching should be accepted or not; for he is rarely in a position to check it by his own experience

There are two points here which frequently arise when an appeal to clinical sense is made, and which may make the student, who has often previously received a fairly thorough grounding in a more rigid discipline than medicine, rather chary of accepting this appeal The first is a certain histrionic setting which tends to occur on these occasions Many of your readers doubtless know the story of the physician —it has been attributed to many—who, leading a large round into his ward, paused dramatically half way down, sniffed the air loudly and said. "Sister, there's a uræmic patient in this ward", to which sister replied: "No, Sir, the patient you saw on Monday died yesterday" One often has an uncomfortable feeling that there is a similar basis for other dramatic clinical dicta.

The second point is a tendency to make a diagnosis against the available evidence without substituting anything in its place No careful analysis of small observations, which are perhaps the basis of the opinion, is given: and of course it is immensely impressive when time or further investigation proves it correct But can the student be blamed for thinking that this may be one of those 50 per cent. of cases which pure chance would make correct?

These methods are memorable in teaching, but if they make the student, whether officially in statu pupillari or seeking enlightenment in a second opinion, doubt that the expert is really trying to bring the sureness of science to the art of healing, they may do *disservice to medicine and to a "clinical sense"* which we all desire.

Lest this letter be taken to imply a criticism of my own teachers, past or present, which is certainly not intended, I hope you will allow me to sign myself

London, S E, May 15 Amathetes

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By Medicus, M P

The ghosts of old Irish controversies walked in the House on the first day of the committee stage of the Military Training, the Conscription, Bill The Ulster members protested against their exclusion from the bill because of "pressure" brought to bear on the Government of Great Britain The phrase "Ireland a Nation" and others reminiscent of a day now past were heard, and across the floor of the House members with Irish interests hurled and accepted a "challenge" But Ulster for all her protests was ruled out of conscription, with florid tributes to her loyalty and with sore hearts on Ulster benches fearing always the danger of a "United Ireland" political propaganda campaign Perhaps some controversies will never die

On the main issues of the conscription bill each clause is being debated with intense interest and the desire to amend its words comes from all sides of the House The Labour party had amendments down to set up appellate medical boards for cases of difficulty, and the Minister in charge of the bill promised to consider at least the question of giving the man examined the opportunity of asking for a specialist s opinion The ordinary medical board can get a specialist's opinion if it desires it, so why should not the man examined do it also? So ran the argument, and the Minister may embody this in the bill when it comes to a later stage An argument that impressed the House was to the effect that rejection by a medical board because of physical defect might have a prejudicial effect on a man's chances of obtaining employment later.

Another medical proposal put forward was that the original medical examination of a conscript should be not only placed on permanent record, but more thorough-going than is usual for military purposes. It was suggested that if exact observations such as are made for life assurance were recorded this would facilitate the work of any board considering the man's health in the future Anyone with any experience of the difficulty of deciding on cases of "aggravation" and on "aggravation passed away" would be glad to see a clear-cut description of a man's physical condition as a basis for such possible judgments There is of course as matters now stand a physical basis for the judgment that such and such a condition is only "aggravated" by service, and at a later time that an aggravation has "passed away" But there is also a conjectural basis—an almost metaphysical basis It is to be hoped that when the medical boards get to work on examining the conscripts they will make accurate observations for the benefit of their successors

Meanwhile it was an object lesson in the inexactitude of parliamentary methods to realise that the Minister in charge of the bill on Thursday in last week—the Chancellor of the Duchy of Lancaster, Mr Morrison—could not state what were the physical standards that would be required of the new militiaman It appears there are to be four categories A, B, C and D—although they were not so named. D will be excluded. C will be confined to employment suitable to men of inferior physical capacity, and A and B will be wanted for average duties. Evidently, however, a great deal has still to be worked out in practice, and the first results of the examinations and of the working of the medical boards, will be eagerly awaited.

* * *

The select committee on the Bastardy (Blood Tests) Bill is accumulating some interesting evidence At a meeting on April 27 Sir Alexander Maxwell, under-secretary of state for home affairs, and Mr F A Newsam, assistant secretary, gave evidence on the legal side of the matter and Dr John Char

Thomas on the medical. Sir Alexander said that although over 4000 affiliation orders are made annually in England and Wales the number of appeals to quarter sessions is very small. In 1937 there were only 70 appeals, although there were 4267 orders. But of those 70 appeals 23 were successful, which is a high proportion from the legal point of view. If the blood tests will only result in the possibility of mistake as to paternity being reduced by one in three this will be a considerable gain in accuracy. The cost—and a fee of £2 2s. per examination was mentioned by one witness—will probably have to be borne by the local authority.

Dr Thomas gave evidence on the application of blood tests in bastardy actions from 10,000 cases collected from all over the world. Of these, 44 were the witness's own, and of the remainder the largest number came from Denmark and the next largest from Germany. *The cases were divided into two* groups: 7000 in which one system of blood grouping was used and about 3000 in which both systems were used. Where the A B O system was used alone the cases excluded were just over 8 per cent.; where both systems were used the exclusion rate was 20 5 per cent. Dr Thomas gave the committee a demonstration of the method of conducting the test and drew attention to the possibility of mistake unless the technique was carried out with great exactitude. He is looking forward to the discovery of additional blood groups and the day when there will be found an actual individuality of the blood, in which case of course the test will be able to say "This man is the father." As the test stands at present however it has this one great advantage—a man can never be incriminated although he may be falsely excluded. If the bill becomes law therefore the number of demands for this test will undoubtedly be very considerable.

Since according to the evidence of Mr L. R. Dunne, the metropolitan magistrate, there is perjury in nearly every defended case, and often desire for revenge, the use of blood tests seems likely to be of great value and with the increasing reliability of blood tests this value should increase. Perhaps it may even be possible one day to extend blood tests to politicians and elect them according to their groups instead of according to their political parties.

FROM THE PRESS GALLERY

The Militia Bill

THE House of Commons on May 10 and 11 considered the Military Training Bill in Committee. Sir SAMUEL HOARE moved an amendment to exclude Northern Ireland from the scope of the bill. He knew that this would cause great searchings of heart among his friends in Northern Ireland, but the Government had taken what they thought to be the wisest decision in the difficult circumstances without reference to so-called ultimatums or threats from any other part of Ireland.

POSITION OF STUDENTS

Mr GARRO JONES moved an amendment to provide that no person should be placed on the register until after he had attained the age of 18.—Mr HORE-BELISHA, Secretary of State for War, said that they were not dealing here with any matter of compulsion; this was to meet the situation of a young man who for reasons concerned with his career, or for other reasons, wished to do his period of service before the age of 20. The general age for entry into the regular services, naval, military or air, was 17½ and not 18, and he would willingly accept an amendment that the age should be 17½ to meet the convenience of the young men concerned.—Mr A. P. HERBERT said he had received a letter from the registrar of Oxford University stating that as regards 1000 boys who would come up in 1940, and who would during their undergraduate course become liable for military service, 500 would come up under the age of 18½. If these boys were not given the option to postpone they would have to begin their six months' training under the age of 18. This was regarded by many headmasters as extremely undesirable, and was regarded with anxiety by the universities because of the risk that at that age a six-months break might be followed by reluctance to resume academic work, as well as by a serious loss of habits of intellectual application and of knowledge. These objections were slightly diminished as boys grew older, and would not apply with equal force to those who would normally be coming up at 19½, though they could still not be disregarded. The numbers of boys coming up as old as 19½ was now quite small.—Mr HORE-BELISHA said that these cases could be completely met under the bill as it stood. The Minister might, in order to suit the convenience of the applicant, antedate or post-date the applicant's liability. The Minister naturally did not wish to damage in any way the careers of these young men and he would fix a date according to the best interests of the student.—The amendment was negatived.

Mr GREENWOOD moved an amendment making it obligatory on the Minister, instead of permissive, to postpone the liability for service of persons engaged in apprenticeship or full time education, or studying as external students of universities or for professional examinations.—Mr LENNOX-BOYD, parliamentary secretary to the Ministry of Labour, said that the Government could not accept the amendment because of its automatic application. This matter must be left to the discretion of the Minister and the hardship committees. They were in touch with the vice-chancellors of the various universities through the University Grants Committee and the Members of Parliament for the universities. They were also in consultation with the Board of Education about students at institutions, such as training and technical colleges. University students whose examinations were due in June would be able to go through their examinations without fear of being called up.—The amendment was negatived.

MEDICAL EXAMINATION OF RECRUITS

On an amendment moved by Mr SHINWELL to provide that a recruit should not be called up for medical examination earlier than the tenth day after the date of the service of the notice, Mr ERNEST BROWN said he would prefer that the bill should not state a definite period, because it was better to have a [illegible] elasticity. The Government meant to give [illegible] three days' notice for the medical examination. That would usually be ample to enable the man to [illegible] his arrangements. There would be about [illegible] medical boards, so that except in very scattered parts of the country, there would not be long delays.

Mr SILKIN moved an amendment [illegible] that any person who was aggrieved by the [illegible] of a medical board might appeal to [illegible] appellate medical board. Unfortunately the [illegible] laid down no standard of medical fitness. It did not declare whether a person was to be fit for [illegible] training or for military service. The [illegible] might be quite different. In the absence of any direction it was conceivable that there [illegible] a variety of standards adopted by the [illegible] medical boards.—Dr HADEN GUEST thought [illegible] it essential in practice to [illegible] not only from the standpoint of the man who was examined but also from that of the medical [illegible] itself. In cases of heart [illegible] and other special conditions [illegible] was necessary and the [illegible] point of view wanted [illegible] It would be interesting [illegible] the medical standards were to be. Were they to be the standards set up for admission to the Army, or some other standards? No-one, least of all members of the medical profession, wanted people to join the Army who would promptly become casualties. It would be possible now for the first time, by taking a cross-section of the population from 20 to 21, to get a view of the condition of the people born in the immediate post-war years, and that would be an extremely interesting test from the medical point of view.—Dr. Summerskill said this amendment sought not only to give a man who was fit an opportunity to appeal but also to give the enthusiastic lad who was anxious to play his part, but who had been diagnosed as unfit, an opportunity to appeal against the diagnosis. Every conscientious doctor would feel happier during these examinations if he knew that the patient had a right to appeal —Mr. W. S. Morrison said that in the view of the Government it was better to have the strongest possible medical boards for the examination of these men in the first instance so that an appeal to another board would be unnecessary. He was convinced that the doctors who composed the boards which were to be set up would regard it as their duty not to put any man into the service unless they honestly believed that he was fit to undergo his training. Nothing like war-time conditions would prevail in these cases, and steps would be taken to ensure that every man was examined with ample time to spare. The medical men on the board would normally be five general practitioners of established reputation He said general practitioners for this reason. The ills to which flesh was heir were so numerous that they could not, for instance, get a nose, ear and throat specialist to act and make sure that he was a proper man to deal with all these cases The board would work as a team. They would take counsel with each other and if there was any difficulty in distinguishing a man's particular condition they could all examine him to make sure. There was power in the bill for the medical board to call in a consultant or consultants whenever they liked.

Dr. Summerskill Suppose the five general practitioners disagree on the condition of a man's heart and call in a heart specialist or consultant Suppose the consultant diagnoses the case and makes a report on the man's condition Then you will be taking the word of one man. We suggest that possibly that heart consultant might be wrong

Dr Haden Guest said that the right of the boards to call in consultants might go some way to meet the case for an appellate board, but it was a one-sided arrangement. Would it not be fair that the man if dissatisfied should have the right to ask to be sent to a consultant?—Mr. W. S. Morrison said that the capacity for human error was no doubt infinite, and even if they had an appellate tribunal of doctors they might all be wrong. But he did not see how they could set up any tribunal of greater authority than was proposed. He would certainly consider the suggestion that the man should also have a right of recourse to a consultant —Mr Garro-Jones thought the Minister had lost sight of the growing tendency in medical science to rely on teams of specialists for diagnosing obscure diseases. The cases in which difficulty was going to arise and in which mistakes and disputes might occur, were those where people were suffering from obscure diseases which no amount of skill and experience would enable a general practitioner to diagnose successfully These cases would not amount to one in a thousand with men between 20 and 21, but when they arose in pensions cases they caused endless argument and difficulty for all parties. They could be resolved only by a team of specialists, such as that which operated at Windsor and in two or three places round London —Mr. Ede said that during the last war they had known of men who were paraded on three successive days. On the first day were category C, the next day B and within 48 hours of being examined they were A Those who had experience of how the Army dealt with this matter in times of stress felt that the most explicit assurances should be given on the point.—The amendment was negatived.

THE MEDICAL RECORD

Mr Ellis Smith moved an amendment to provide that the result of an examination by a medical board should be entered in the records of the person examined, and should be conclusive evidence of the person's state of health at the time of the examination He said that a soldier often suffered from privations during his army service the physical effects of which did not become evident until later in life, and it was very difficult to trace the causes of his condition to war service.—Sir Joseph Nall said that if a man was examined at the beginning of his military training and was found to be A2 or C3, and was furnished with a certificate accordingly, he would be branded as A2 or C3 for the rest of his life. The possession of such a certificate might prejudice him with future employers —Dr Haden Guest said it was necessary to have a medical record for all purposes including the purposes of the Army itself. The record ought to be of a much more exhaustive character than the usual record of an Army examination There were a large number of conditions, such as nasal, eye and ear conditions, on which the whole question of validity or otherwise might depend in the future, and unless they were noted now there was no evidence for or against them. They then became a matter of medical opinion It was true that in any sensibly conducted unit these men would be examined again before being sent overseas, but that did not make it less desirable to have a record of the exact physical condition of the man when he was first examined. If that examination was not much fuller than was usual in the Army disputes would arise in the future—Sir Lambert Ward doubted whether it would be to the advantage of the man who was to become a militiaman to have the various medical facts entered on his record card It could not be to his advantage to have it recorded that he had a tendency to flat feet, or a slightly varicose vein, or that he showed signs of having had tuberculous trouble in his early youth. From the point of view of a man securing employment when he left the Army it would be much better that these slight physical defects should not be recorded—Dr Summerskill said that every one of these youths who would be called up was already on the list of a doctor under the National Health Insurance Act, and a record already existed of their physical condition. An employer had only to demand a certificate of health from the boy's insurance practitioner for all these things to be revealed Therefore, it was quite wrong to say that another record would damage a boy in any way. The amendment only asked that the doctor should follow modern medical practice It was obligatory on doctors, who worked under the National Health Insurance Act to keep records The only doctors who refused to do this were those who had insufficient clerical help. There would be plenty of clerical help for these medical boards. If the Minister refused this very simple amendment she thought there must be some ulterior motive.—Mr. Lennox-Boyd said it was quite impossible for the Government to accept the amendment. As worded it meant that any such record should be taken as conclusive evidence for all purposes It would be conclusive evidence for the purposes of a variety of other Acts of Parliament and other proceedings in ordinary life, such as workmen's compensation, and the interests of many people whom they were anxious to help would be prejudiced if the amendment were carried. The medical boards would group the men into four categories. Those in the bottom category would not be called up for training. Those in the top three categories would be called up, but the nature of their duties would vary with the category, so that those who were in the third category—that was near the exclusion line—would not be

Tuberculosis in Wales

Captain ARTHUR EVANS asked the Minister of Health whether he was now in a position to make any statement as regarded action to give effect to the recommendations of the recent committee of inquiry into the anti-tuberculosis service in Wales and Monmouthshire —Mr ELLIOT replied: Yes, Sir. The report drew attention to the high incidence of tuberculosis in Wales and pointed out that the ratio of beds to cases is lower in Wales than in England. It is clearly desirable that all practicable steps should be taken to reduce infection arising from contact with active cases The first step in this direction must be to reduce the long list of waiting cases which now exists, particularly in South Wales I am accordingly arranging for the immediate construction in South Wales, under the emergency hospital arrangements, of a new hutted hospital of some 600 beds which will be made available in peace-time to the Welsh National-Memorial Association on favourable terms The provision on similar terms of some 200 beds in hutments attached to an institution in North Wales is also proposed, and arrangements for Central Wales, possibly in the Shrewsbury area, are under consideration I hope that this new accommodation will be available for the treatment of tuberculosis within the present year. This would be without prejudice to the plans now under consideration by the Welsh National Memorial Association

In addition, I have, starting from this week, detailed three of my housing inspectors to undertake a careful survey of the rural counties of Wales and to discuss with the local authorities concerned the best methods of solving their housing problems I am also in conference with the authorities concerned on other aspects of the committee's recommendations

Mr. J. GRIFFITHS: Regarding what the Minister said about surveys of housing conditions in rural areas, is he not aware that what is needed is not another survey, but action?—Mr ELLIOT: I thoroughly agree, and that is why I have said that I am to discuss with the local authorities the best means of solving their housing problems, and action is very badly needed indeed

New Silicosis Regulations

Mr. JAMES GRIFFITHS asked the Home Secretary when he proposed to issue the new regulations, under the various industries silicosis schemes, extending the period within which certification could take place to five years, and from what date the new regulation would operate.—Mr. PEAKE, under-secretary, Home Office, replied: My department is still in communication with the general council of the Trades Union Congress on the draft scheme, but my right hon friend hopes to be in a position to make a decision very shortly It is proposed that the scheme should come into force on the date on which it is made, my right hon friend is advised that he cannot make it apply retrospectively.

Voluntary-aid Detachments

Colonel PONSONBY asked the Secretary of State for War whether he could make any announcement with regard to conditions of service in the voluntary-aid detachments.—Sir V. WARRENDER, financial secretary to the War Office, replied: It has been decided on the basis of a revised establishment of women members of voluntary-aid detachments, provisionally fixed at 11,000, of which not more than 2000 would be immobile non-nursing members, and on the understanding that members will undertake to come up for service in a national emergency when called upon to do so under the authority of the Army Council, to authorise the following payments, in substitution of those at present approved Annual payments to the Voluntary-aid Detachment Council of £2000 for central administration expenses, £5000 towards general expenses of the county controllers and voluntary-aid detachments in the country, £1 a head for members and £2 for officers for the provision of uniform.

In addition to these payments women personnel of voluntary-aid detachments will receive payments for attendance at camp hospitals with the Territorial Army and for training in military hospitals, at the rate of £1 for 8 days and £2 for 15 days in the case of officers, and 1[illegible] for 8 days and £1 for 15 days in the case of members Apart from these payments they will continue, as at present, to be given accommodation, rations or allowances, and free conveyance or travelling expenses to and from camp or hospital.

MONDAY, MAY 15

Disability Pensions

Sir THOMAS COOK asked the Minister of Pensions how many men totally disabled by the great war had no disability pension; and how many of these were at St David's Home —Mr H RAMSBOTHAM replied I am glad to have this opportunity of correcting a misunderstanding which appears to have given rise to this question There is no ex-Service man totally disabled as a result of his service in the great war whose claim to pension has been refused by my department. I may add that full opportunity has always been afforded to any ex-Service officer or man to put forward any claim he may consider he has against my department, and every claim is fully investigated There are at present 15 disability pensioners in the home referred to who are under treatment at the expense of the Ministry.

TUESDAY, MAY 16

Dietaries in Scottish Prisons

Sir THOMAS MOORE asked the Secretary of State for Scotland whether he could give details of the new dietaries introduced since 1937 in Scottish prisons, and whether further improvements in such dietaries were contemplated —Mr COLVILLE replied. *Improvements in dietaries* introduced in 1937 included provision of meat for dinner twice weekly for certain classes of prisoners who had not previously received meat, addition of cheese for supper twice weekly *for all classes of prisoners and issue of bread-*crumb pudding for dinner for all prisoners twice instead of once weekly. The following improvements were made in dietaries in Scottish prisons at the beginning of April, 1939. (1) *substitution of* whole *milk for skimmed milk* for all purposes, (2) issues of cheese for supper made on four days per week instead of two days; (3) jam issued *for supper on three days per week*, (4) *twelve sixteenths oz of sugar allowed for tea and cocoa* instead of nine-sixteenth oz, (5) currants, suet and sugar in breadcrumb pudding, which is served twice each week, doubled The answer to the second part of the question is in the negative

Provision of Pit-head Baths

Mr. JAMES GRIFFITHS asked the Secretary for Mines what progress was being made in the provision of pit-head baths, and the extent of the building programme for this and the next year.—Mr GEOFFREY LLOYD replied During 1938 47 new pit-head bath installations and 6 extensions accommodating nearly 56,000 persons were completed and at the end of that year pit-head baths had been provided, or were under construction, for 416,[illegible] persons at 334 collieries and the available money had been nearly exhausted. The building programmes for 1939 and 1940 will be framed on the basis of the additional money available as the result of the Mining Industry (Welfare Fund) Act, 1939, and provisional arrangements have been made to place contracts in 1939 for 37 new *bath installations accommodating 35,548* persons The contracts to be placed in 1940 have not yet been settled but it is estimated that they will provide accommodation for 45,000 additional persons

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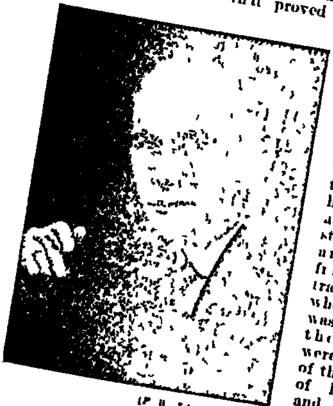
TEMPORARY HOSPITALS FOR SCOTLAND.—The Department of Health for Scotland is considering the erection of five hutted hospitals for use in war time These will be additional to the emergency annexes to existing institutions that have already been arranged for and will be independent units The hospitals will be planned to accommodate 600 beds each and to allow for possible expansion to double that number. The department's representatives have discussed the location of the hospitals with the railway companies with a view to arranging direct railway access, and have also consulted representatives of the Association for the Preservation of Rural Scotland as to the best way of preserving existing amenities

OBITUARY

EDWARD WING TWINING

M R C P , F F R D M R E

Dr Twining's death on May 7, at the age of 52 within a few weeks of the death of his partner and close friend Dr R S Paterson, is a grave loss to Manchester and to British radiology The third and last volume of the "Textbook of X Ray Diagnosis," of which Twining was a joint editor, is in the press, and he was working on his presidential address to the section of radiology of the Royal Society of Medicine when he was struck down by an illness that proved fatal in a week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Twining's early life was clouded by the sudden death of his father, a doctor at Salcombe in Devonshire, who was thrown from his horse when a boy threw a stone at it in an election fracas By this tragic accident, when Edward was only seven, the family were deprived of their source of livelihood, and as in so many such cases Epsom College came to the rescue A foundation scholarship to Epsom gave Twining his chance and in due course he won a scholarship to University College Hospital But here another blow awaited him for while an undergraduate he contracted acute osteomyelitis of the femur After a long illness and many operations he recovered but with a permanent limp and a lowered resistance to the staphylococcus For the rest of his life he was seldom to have more than two or three years without a recurrence of infection from the same cause and his final illness was A friend and fellow student who acted as his dresser in this first illness with its months of suffering, never once heard him complain The courage he then showed was characteristic He was endowed by Nature with a physique that might have made him an athlete of international fame, but much of his great strength of mind and body had to be used in a long struggle against ill health and pain A lesser man would have given up the struggle

After he qualified in 1917 Twining had some experience of general practice in Hampshire and then held the posts of resident medical officer at Queen Mary's Hospital for Women and Children, house surgeon to Mr Wilfred Trotter at University College Hospital and of extra assistant in the same hospital When the war came he was rejected for general service on account of his lameness but got to France with the British Red Cross as surgeon to an ambulance train A year later he was given charge of the electrotherapeutic department at Netley, with the honorary rank of captain His investigations on the treatment of injuries of the peripheral nerves were published as a book in collaboration with H S Souttar After the war he did similar work at Netley under the Ministry of Pensions until, determined to make radiology his life's work, he resigned in order to work at St Thomas's Hospital for the new Cambridge diploma in radiology It was after the examination for this diploma that A E Barclay, who had examined him, offered him a post in Manchester His work as junior radiological officer at the Manchester Royal Infirmary was so good that he was soon hon radiologist to Ancoats Hospital and a partner with Dr Barclay and Dr Paterson When Barclay left Manchester for Cambridge, Twining succeeded to a senior post at the infirmary and was elected to its honorary staff in 1928 He was also hon radiologist to the combined Christie Hospital and Holt Radium Institute. He was president of the Faculty of Radiologists, in the formation of which he took a leading part He was also lecturer in radiology to the University of Manchester

Twining's monumental work on the radiology of the respiratory system, which occupied most of the first volume of his textbook, brought him a reputation in Europe and America as well as in this country He also simplified and improved the technique of tomography, and was one of the first to extend its application from diseases of the lung to cerebral diagnosis In the radiological diagnosis of obscure lesions of the skull and the brain he was supreme, but his skill was no less outstanding in diseases of the alimentary and genito urinary tracts The secret of it lay in his critical intelligence, and his immense industry, not to be beaten by any difficulty, and his determination a high standard of technical achievement He insisted on spare no pains to secure the best possible films and would Having secured them, he could get more out of them than could others of like experience

Although his lameness shut him off from athletic amusement and made walking hard and often painful it did not prevent him from enjoying life He was always, writes a surgical colleague, creating something When others were playing golf or tennis he would be in his garden or his workshop, both of which gave him constant delight On holidays his sketch book was always with him and the water colours he brought back with him were things of rare beauty, though with characteristic modesty he required some persuasion to bring them out at all. He was to be found entertaining children, either in his garden, or showing them the bones of their hands on the fluorescent screen He loved a quiet evening spent with friends and was that rare combination of good talker and good listener Because he was so wise and so free from self seeking his opinion was often sought on difficult questions of policy outside his own department

Dr Twining leaves his widow with two daughters

MEREDITH ROUNTREE WHITLA

L.R.C.P.I

THE death of Dr Whitla of Monaghan took place on April 19 after a trying illness which he bore with great courage He was 80 years of age, but though troubled for some years by intractable rheumatism he was unusually active in mind and body and did not let his disability prevent him carrying on practice until a few months before his death

A son of Mr Robert Whitla of Monaghan he began his career as a pharmaceutical chemist in L town Later he studied medicine at the old Queen's College, Belfast, and qualified in 1898, starting practice in Monaghan shortly afterwards For many years he acted as assistant surgeon and registrar to the old County Infirmary where he worked with James Campbell Hall, his life-long friend Whitla was a member of council of the Pharmaceutical Society of Ireland; he held the office of justice of peace in former days and was for many years a town councillor. Among his varied interests the chief was freemasonry and he held high office including that of first principal of the District Grand Royal Arch Chapter of Armagh. He was a brother of the late Sir William Whitla of Belfast The two were much attached, and on Sir William's death in 1933 Meredith prepared a beautiful work "In Memoriam," which was printed *for private circulation* Whitla possessed the qualities of skill, kindliness, and good humour to an unusual degree, and it was remarkable how he adapted himself to the changing phases of medicine and kept pace with recent advances. His notes on cases were models of clinical accuracy, and written in a fine clear style they reflected the clear-thinking honest nature of the man.

In 1887 Dr. Whitla married May Elizabeth Connor, daughter of the late Dr. Shewbridge Connor of Carlow, who survives him.

ARTHUR WELLESLEY SANDFORD

M D R U I.

Mr Arthur Sandford, the Cork ophthalmic surgeon, died at St Albans on May 12 His father was rector of Clonmel, co Tipperary, and he was born there in 1858. He was educated at first privately and then at the old Queen's College, Cork, where he was an exhibitioner and took first-class honours in his final in 1882 In those days specialism was in its infancy and in Ireland there were few ophthalmic or aural surgeons outside Dublin Sandford was therefore something of a pioneer when he started as an eye, ear, and throat surgeon in Cork, and his practice soon extended beyond the limits of his province In 1897 he organised the building of the Cork Eye, Ear, and Throat Hospital, to which he was a visiting surgeon until his retirement Sandford possessed the strong but gentle hands of the born surgeon (and the born fisherman) and he combined with technical skill a gift for making friends which was invaluable to a consultant He held the chair of ophthalmology at University College, Cork, and had been president of the Irish Ophthalmological Society, vice-president of the Ophthalmological Society of Great Britain, and co-editor of the *Journal of Laryngology, Rhinology and Otology*

During the war Sandford acted as consultant ophthalmologist for the southern district of Ireland In the last twenty years failing health made him gradually give up active work. In 1902 he married Mary, widow of Lord Carbery, and he leaves two sons

HARRY GORDON SMITH

M B CAMB, D.P.H.

Dr. Gordon Smith, who died at Knightwick Sanatorium, Worcestershire, on May 6, was born at Willesden in 1876, his father being an architect, Percival Gordon Smith, F.R I B A. He was educated at Berkhamsted School and Trinity College, Cambridge, proceeding to St. Bartholomew's where he took his M B in 1902 After qualification he was a resident at the West London Hospital and the London Fever Hospital, and did clinical assistantships at the Royal Eye Hospital and the Evelina In 1908 he was appointed medical superintendent of the King Edward VII Memorial Sanatorium at Knightwick and started what was to prove his life's work.

Gordon Smith was one of the most able clinicians on chest cases in the Midlands, and his services as chief tuberculosis officer for Worcestershire, as well as his work at Knightwick, will be long remembered by medical men in the county and by the host of grateful patients who passed through his hands Though his manner was unassuming, his courtesy and understanding combined with a wholly imperturbable temper gave him a natural dignity. In his work he was always to the fore where progress could be made, but he never promised anything that he was not sure he could achieve His judgment was sound, and the opinions expressed in his reports written a quarter of a century ago could not be bettered today Although his chief interest was in his work, he was a keen shot and fisherman and played golf and cricket

In 1903 Gordon Smith married Eileen Newbury of Milton Ernest, in Bedfordshire They had three daughters and one son, who is now a student at Bart's

ARTHUR ROSS BOYD

M B R U.I.

Dr Boyd, who died at his home, Holywell House Antrim, on April 18 at the age of 57, was resident medical superintendent of the county mental hospital having succeeded Dr Walter Smyth when he died years ago Before that Boyd was deputy medical superintendent of the Powick (Worcestershire) mental hospital. *A native of Ballymena*, he studied medicine at the Queen's College, Belfast As a student he was handicapped by ill health, but his undergraduate career was marked by exceptional brilliance and he gained several scholarships including the gold medal for diseases of women and children and the Malcolm exhibition. He graduated in 1908 with first class honours, and after spending a year as house physician and house-surgeon at the Royal Victoria Hospital Belfast, he entered the *mental-hospital* service He showed great aptitude for his chosen work, and served successfully in hospitals at Gloucester, Darenth, London and Lancaster before being appointed to higher rank He effected great improvements at Antrim in his comparatively short period of office, a noteworthy achievement being the opening of the Bush House wing for the treatment of private female patients, which has proved a most valuable *asset under his capable administration*

Dr Boyd was a keen sportsman, being chiefly interested in cricket, badminton and lawn tennis He was a man of charming personality and many friends He is survived by his wife and three young daughters

GEORGE HERBERT ROSE HOLDEN

M D CAMB

Dr George Holden, who died at Reading on May 5, was the son of Dr G H Holden *of* Worcester, and he was born at Presteigne, Radnor, in 18[illegible] He was educated *at* Sherborne and Caius College, Cambridge, and did his clinical work at St. Bartholomew's Hospital, qualifying in 1859 After house-appointments at Bart's and at Birmingham General Hospital he went into practice at Reading. There he was medical examiner to the Commercial Union and other insurance companies and medical officer of the Church Army *Home* and St Mary's Home He took a keen interest in the proceedings of the Oxford and Reading branch of the British Medical Association and the Reading Pathological Society, later becoming president of both He was a life member and examiner of the St John Ambulance Association and was made a knight of grace of the Order for his work as president of the Reading centre During the war he served as captain in the R A M C (T F) at the Third Southern General Hospital and Reading War Hospital, being mentioned in dispatches for his services, and after the war he took charge of the electrotherapeutic department at the Royal Berkshire Hospital He was a member of the town council since 1927, and took a leading part in the task of transferring the city hospitals from the guardians to the borough council He was mayor of the borough in 1934

Mrs Holden, who before her marriage was Frances Mary Cole, only survived Dr Holden by one day They leave three sons, of whom the youngest, Dr C L Holden, is now in practice in Reading

Dr **William Mabson Gabriel**, who died on March 28 in his 80th year was the son of the Rev Edward Gabriel of Kendal and qualified at Edinburgh in 1887 As a medical student he was a prominent athlete, and assisted in forming the Edinburgh Harriers in 1885, of which he was the first captain and afterwards president He held the four mile amateur record for Scotland in 1886 For some twenty five years he was in general practice at Keighley, Yorkshire, and for most of that time medical officer to the infirmary In 1914 he received the Territorial Decoration for 21 years' service, prevented by an attack of pneumonia from going overseas he became D A D M S in the Lincolnshire region with the rank of brevet colonel After the war, following his old love of the sea, he served for several years as ship's surgeon with the P and O line, retiring about five years ago to Oulton Broad

Mr **R J F Danford Thomas**—Many practitioners of law and medicine in London will miss Mr Francis Danford Thomas the City coroner who died on May 10 at the age of 65 He succeeded Dr F J Waldo in 1932, after serving for thirty years as deputy coroner for the City of London the Central London district, and the Tower of London He was noted for his kindness and consideration to all those who gave evidence before him Himself the son of a coroner, Dr George Danford Thomas, senior coroner for the counties of London and Middlesex he was educated at Harrow and Brasenose, and was called to the Bar by the Middle Temple in 1900 In 1929 he was president of the Coroners' Society of England and Wales, and later he became its honorary secretary He was a valued member of the council of the Medico Legal Society

MEDICAL NEWS

University of Cambridge

On May 12 the degree of M A was conferred on Dr O M Solandt university lecturer in mammalian physiology The following degrees were also conferred —

M.D—D P King
M.B B Chir—R H Winfield

Applications are invited for two Elmore studentships for research in medicine The commencing salary will be £300 a year and the appointments will be for two years in the first instance Further particulars will be found in our advertisement columns

University of Grenoble

Sir StClair Thomson F R C P and Mr A Tudor Edwards F R C S , represented the University of London at the 600th anniversary celebrations of this university An honorary degree was conferred on Mr Tudor Edwards

University of Manchester

Mr Harry Platt has been appointed professor of orthopædic surgery, and Mr Geoffrey Jefferson professor of neurological surgery in the university Prof John Morley who has held the chair of surgery since 1936 will continue as professor of surgery and director of the department of surgery

Mr Platt, who studied medicine at Manchester was awarded the gold medal when he took the final M B examination of London University in 1908 After holding resident posts at the Manchester Royal Infirmary and demonstrating anatomy at the University of Manchester he obtained his M S Lond in 1911 and the F R C S the following year In 1913 he went as house surgeon to the Royal National Orthopædic Hospital London Two years of postgraduate study in America followed which were spent in Boston and New York During the war he held the rank of captain in the R A M C (T) and attended the 2nd Western General Hospital Manchester Later he was appointed surgeon in charge of the Special Military Surgical Centre (Orthopædic Hospital) Manchester In 1921 he graduated as M D Manc , again with a gold medal After the war he continued his work at Manchester, where he is orthopædic surgeon to the Royal Infirmary and consulting orthopædic surgeon to Ancoats Hospital and to the Lancashire county council He is also clinical lecturer in orthopædic surgery in the university In 1934 5 he was president of the British Orthopædic Association and he was elected hon F A C S in 19[illegible]

Mr Jefferson who is also a student of Manchester medical school graduated M B Lond with honours in 1909 and was awarded the gold medal when he took his M S Lond some four years later After a period of surgical practice in British Columbia he returned to England during the war and served in France as a surgeon specialist to the British Expeditionary Force and in Russia After the war he was appointed surgeon to the Salford Royal Hospital and later became hon neurological surgeon to the Manchester Royal Infirmary and hon surgeon to the National Hospital Queen Square London He is lecturer in applied anatomy in the University of Manchester In 1923 he delivered a Hunterian lecture to the Royal College of Surgeons to whose fellowship he was admitted in 1911 In 1932 he was elected Savill orator He is president of the British Association of Neurosurgeons

Dr Walter Schlapp, lecturer in experimental physiology, has been appointed assistant director of the physiological laboratories, and Dr A A Harper, lecturer in human physiology

Royal College of Surgeons of England

A meeting of the council was held on June 11 with Mr Hugh Lett, the president, in the chair when Sir Arthur MacNalty and Mr H Muir Evans were admitted to the fellowship Mr Seymour Barling was elected a member of the court of examiners and Prof E P Stibbe and Prof Samson Wright were appointed to examine for the primary examination for the fellowship to be held in India and Egypt in 1939–40 It was reported that a Mackenzie Mackinnon fellowship had been awarded to Dr G W Hayward (St Bart s) for research on the relationship between pulmonary congestion and dyspnœa, and the Gilbert Blane medal for 1939 had been awarded to Surgeon Lieut Commander J Mansel Reese

A diploma of fellowship was granted to Henry Meredith Martin of Trinity College, Dublin, and diplomas of membership to E C A Innes (Lond Hosp), P H Patel (Edin) and to the candidates mentioned in the report of the comitia of the Royal College of Physicians which appeared in our issue of May 6 p 1073 Diplomas in tropical medicine and hygiene were granted to the candidates whose names were given on p 1074 of the same issue

Royal College of Surgeons of Edinburgh

At a meeting of the college held on May 15 with Mr W J Stuart the president in the chair, the following were admitted to the fellowship —

Samuel Solomon Bikoff M B Man , Robert Symon Carden M B Aberd , Alfred Henry Randell Champion M B Melb , Horatio Alexander Cowan M R C S , Curzon Watkin Farmer M B Sydney Robert John Maryland Galloway M B Toronto Ronald Cowans M B Glasg , Alfred Buckley Hare, M R C S , Niblas Hazra M R C S , Edwin Henderson M B Belf , Harry Joseph Hoffman M B Witwatersrand , Patrick Hogan M B N U I , Frank Edwin Hugh F R C P I , William Gibb McDowell M B Edin , Charles Alfred McDermott M B Sydney, John Pickering Middleton, M B Toronto, Ian Cameron Milne M B Edin , Isidore Nowitch M B Witwatersrand , John O Brien M B Sydney [illegible] Nilkanth Parandikar M B Bombay Brian Reeves M R C S , Hugh Tait Rutherford M B Glasg Charles Scott Russell M B Edin , [illegible] Smith M B Aberd Simon Sutton M B Manc , [illegible] Victor Thomson M B Melb , and Emil Lewin Wilson M B N Z

The following candidates received the higher dental diploma —

[illegible] M Hall [illegible] A J Thompson R C Kelly and A T C Lumsden

Royal Army Medical Corps

The following candidates have been selected for short service commissions in the Royal Army Medical Corps —

H Jacobs, M B N Z (Otago), P R Wheatley, M B Lond (Guy's Hosp), J Montgomerie, M B Birm ; J P X. Fox, M B Lond (*King's Coll and* Westminster Hosp), J. G. Peacock M R C S (St Thomas's Hosp); R L Macpherson, M.B Edin ; N F Field, M B Durh , J J McGrath, M B N U I (Univ Coll , Cork); W L O'Donnell, L R C P I , W B Foster, M B Lond (St *Bart* 's Hosp) J C B Nesfield, B Chir Camb (St Mary's Hosp), H McCann, M B N.U I (Univ Coll , Dublin), D J Waterston, M B Edin , T O McKane, M B Lond (St *Bart* 's Hosp), G W A Gordon, *M B Edin* ; R A R Topping, M R.C S (Guy's Hosp), C E Brown, M B Glasg . S J Nathan, L M S S A (Charing Cross Hosp), F D FitzG Steede, M B Dubl , C W A Hughes, M R C S (Univ Coll Hosp), and F B Lake, M R C S (Guy's Hosp)

Westminster Hospital, London

On June 11 patients will be moved into the new Westminster Hospital The hospital will be open for private inspection by governors and subscribers, who may be accompanied by friends, on June 1 and 2 at 2 30 P.M Those who wish to accept this invitation should write to the secretary of the hospital, Broad Sanctuary, S W.1, as soon as possible

People's League of Health

The People's League of Health has organised a scheme of clinical research to determine the influence of diet on expectant and nursing mothers in relation to maternal mortality and morbidity Systematic observation and records are being collected at the ten London hospitals which are coöperating with the league in this research, and the results will be studied and published in due course.

Metropolitan Hospital, London

The section of the centenary extensions scheme of this *hospital* which is *to be carried our first is an underground* first-aid and casualty *station*. It is *proposed* that the station shall have an area of about 20,000 sq. ft.

The Glasgow University Club, London

This club will dine at the Trocadero Restaurant, London, W 1, on Friday, *June 2,* at 7.30 P M *Prof. G. H. Edington,* F.R C S , will be in the chair Any Glasgow University men who, though not members of the club, wish to attend are asked to write to the hon. secretaries, 62, Harley House, N W 1.

Le Play Society

This society (1, Gordon Square, London, W C 1) has planned the following holiday courses of field studies of archæology, history, geography, geology, botany, and sociology · (1) Whitsuntide in Yorkshire, visits being made from headquarters at Harrogate to York, Ripon, Fountains Abbey, Rievaulx Abbey, Helmsley Castle, Byland, and Bolton Abbey ; (2) Denmark (July 29–Aug. 23), which is to be studied from Copenhagen, Odense, and Aarhus ; (3) French Alps (Aug 1–20), for studying art from Bourg d'Oisans ; (4) Switzerland (July 29–Aug 19), with headquarters at Disentis, where Romansh is still spoken , (5) a Scottish camp in Arran (Aug 1–16) , (6) the Cotswolds (Aug 9–23), to include a training course in local survey, working from Cranham ; and (7) New York (Aug 30–Sept 19) for the World's Fair

Tuberculosis in Wales

At a meeting of the council of the King Edward VII Welsh National Memorial recently a scheme was adopted which will involve a capital expenditure of £465,000 in the next eight years and provide an additional 391 beds for tuberculosis in Wales The scheme includes proposals for a new hospital in West Wales, probably at Swansea, a new research laboratory at Cardiff, additions and extensions at other sanatoriums, village settlements, and improved clinic facilities. Efforts will also be made to cope with the long waiting-lists and to arrange for the domiciliary examination of patients and contacts and for aftercare The sum of £1800 has been earmarked to improve nurses' accommodation, to increase their salaries by £10 a year, to limit their hours to ninety-six per fortnight, and to give them a month's holiday every year

Reference is made in our Parliamentary columns to the Government's proposals for emergency hutted hospitals which in peace-time will be made available to the associa on favourable terms.

Medical Officer's Jubilee

Dr. C E M Jones, senior assistant medical officer at the Lord Mayor Treloar Cripples' Hospital, was entertained at dinner *on* May 6 by the honorary medical board and past and present resident medical officers, to celebrate his 20 years *of service* at the hospital Sir Henry Gauvain, who was in the chair, presented Dr. Jones on behalf of his colleagues with an inscribed gold cigarette case.

Royal Sanitary Institute

A meeting of the institute will be held at Newport, Mon , on Friday, June 2, at 5 P.M The first of the subjects will be introduced when Dr Gwyn Rocyn Jones, bacteriologist to the Monmouthshire county council, will speak on coordination between local authorities and the Ministry of Agriculture in the administration of the Agricultural Act, 1937 (*Part IV*) There will also be a discussion on the rôle *of the* health department in air raid precautions *organisation*

Congress of Medical Hydrology

The sixteenth International Congress of Medical Hydrology, Climatology and Geology will take place in Strasbourg *from* Oct 8 *to* 11, under the presidency of Prof Danjon, dean of the faculty of sciences, Prof Sartory, dean of the *faculty of chemistry,* and Prof. Forster, dean of the faculty *of medicine of the university*. Subjects for discussion will *include the* hydromineral treatment of skin diseases, and *the development* of French spa equipment in the last 20 years Further particulars may be had from Prof Vaucher, Institut d'Hydrologie, 1, place de l'Hôpital, Strasbourg

Royal Society of Medicine

The house and library *of the society* will be *closed for the* Whitsun *holiday from* May 27 *to* 29 *inclusive*

Plymouth City General Hospital

On May 3 the Duchess of Kent inaugurated an extensive reconstruction scheme at this hospital when she laid the *foundation* stone of the new maternity unit The scheme *which is to cost £225,000, demands the demolition* of about *two-thirds* of the existing buildings, many of which are nearly a hundred years old Three hundred new general beds are to be provided in units of 30 beds each in three radiating wings Each unit comprises an 18 bed ward, four single-bed wards, and two 4-bed wards Two operating-theatres are being provided on the ground floor of the centre block The maternity unit which is now under construction consists of a two storied building with 20 single-bed wards and four 4-bed wards A new administrative block, a central kitchen, stores, and a reception and outpatient department are included in the scheme. The total bed accommodation of the reconstructed hospital will be 573

Medicine and Industry in the Tropics

The Mosquito Day luncheon established by Sir Ronald Ross was formerly held on Aug 20, the anniversary of his discovery in 1897, but this was a somewhat inconvenient date, and after the amalgamation of the Ross Institute with the London School of Hygiene and Tropical Medicine in 1933 it was thought fitting to link the name of Manson with that of Ross and to commemorate them jointly at a Manson-Ross luncheon held at the school on Mosquito Day, Sir Ronald Ross's birthday, May 13 This year about 17 people were present, with Mr Neville Chamberlain in the chair Mr A Chester Beatty paid tribute to Manson and Ross *and to the* London School *of* Hygiene and Tropical Medicine and the Ross Institute for the part they have played *in the* industrial *and* agricultural development of the British Empire. *He regretted,* how-ever, that "*when some of the heads of the* agricultural and *mining companies are approached on the* subject of the work of those *institutions and are asked* for contributions, they look upon the *matter as if they* were asked to contribute to a charity " Later he quoted figures comparing the total production value of the various industries *affected* by *research in tropical medicine* and the contributions they made *to medical research* institutions A most important factor for companies operating in unhealthy countries was, he said, the increased turnover in skilled labour due to illness, which had resulted in great loss of capital Therefore he emphasised that these institutions should be looked upon as "research laboratories for enterprises operating in unhealthy countries subject to malaria and other tropical diseases" Whereas expenditure on metallurgical experiments had been large, that on research into the health problems of the places where the companies were operating said Mr Beatty, had constantly been inadequate He mentioned how, after several companies in the copper belt of Northern Rhodesia had implemented the recommendations of Sir Malcolm Watson, the number of cases of malaria decreased from 90 per 1000 in 1929 to 15 per 1000 in 1938 The death rate in the copper belt 6 4 per 1000, was now less than half that in Kensington (where admittedly there were older people living) One rubber estate in Malaya had an acreage of 1632 in 1911, 2050 in 1923, and 6801 in 1932 In 1911 the death rate was 232 per 1000, in 1923 it was 3, in 1932 it was 1 1 and in 1938 it was down to 0 08 In 1911 the European staff were unhealthy and were unable to have their families with them In 1923 there was almost no sickness and the staff had their families Mr Beatty added that the school was doing not less important work for the temperate regions, being perhaps the greatest research and teaching school of hygiene in the world —Sir Robert Annan said that the mining industry values the institute and realises that to do so is sound policy and good business Mr Neville Chamberlain said that there are extensive tropical areas *still to be exploited for which the support of the school* is necessary He considered it a sound investment and urged mining and industrial enterprises to use it his presence was, he remarked, an indication of the importance that the Government attaches to the school

Appointments

CLIFF, F STORRY, M D Lond M R C P hon physician to the Royal Lancaster Infirmary

COLEMAN, MARK M S Lond, F R C S, hon assistant surgeon to the Hertford County Hospital

EVANS, ELLIS, M D Lond, D P H assistant medical officer of health for Shoreditch

HARRIS, J R G M B Camb D A hon assistant anæsthetist to the London Hospital

HUNT T A, M B Sheff assistant medical officer of health for Bury

KEMP F H, M B Birm M R C P D M R assistant radiologist to the Radcliffe Infirmary Oxford

MCFADZEAN, JAMES M B Glasg F R C S hon surgeon to the Royal Lancaster Infirmary

ROSS A I M B Edin D P H assistant medical officer of health for Bristol

TROVER W S B M Oxfd M R C P hon assistant physician to the department of physical medicine of the London Hospital

WATSON, A J M B Lond F R C S visiting fracture and orthopædic surgeon to the Coventry and Warwickshire Hospital

WOODBRIDGE O H M, M R C S L D S hon dental surgeon to the Prince of Wales's General Hospital, London

Charterhouse Rheumatism Clinic London —The following have been appointed temporary clinical assistants—

DALLY, J HALLS M D Camb, M R C P,
WILLIAMS, H AUSTIN, M D Camb,
SAVAGE OSWALD M R C P,
DAINTY R G M R C S and
WALKER DORA M B St And

Vacancies

For further information refer to the advertisement columns

Antrim County Mental Hosp —Res med supt, £900

Barrow-in-Furness County Borough &c —Obstetric officer £1000

Birmingham, Canwell Hall Babies Hosp —Res M O, at rate of £250

Birmingham General Hosp —Res surg registrar £100

Blackburn County Borough —Asst M O H, £600

Bolton Royal Infirmary —H P, at rate of £200 Also three H S s each at rate of £150

Boston General Hosp —Res M O at rate of £150

Brighton Royal Alexandra Hosp for Sick Children —H S £150

Brighton Royal Sussex County Hosp —H P and cas H S at rate of £150 and £120 respectively

Brighton Sussex Maternity and Women's Hosp —Res H S £150

Bristol University —Part-time medical officers

British Postgraduate Medical School Ducane Road W 12 —First asst in dept of surgery £500

Cambridge Addenbrooke's Hosp —Res anæsthetist and emergency officer at rate of £130

Cambridge University —Two Elmore medical research studentships each £300

Cardiff Royal Infirmary —Radium registrar, £100

Carshalton Beddington and Wallington District Hosp —Three hon M O's

Central London Throat Nose and Ear Hosp Gray's Inn Road W C 1 —Registrar, £150

Chelsea Hosp for Women Arthur Street, S W 3 —Jun H S (Male), £100 Also medical officer for convalescent home, St Leonards-on-Sea

Derby Derbyshire Royal Infirmary —H S for cas dept £150

Derbyshire County Council —Locum res asst M O for Walton Sanatorium £350

Doncaster Royal Infirmary —H S to ear, nose and throat dept and res anæsthetist, at rate of £150

Dorset County —Asst county M O, £500

Dreadnought Hosp, Greenwich S E 10 —H P and H S each at rate of £110

Elizabeth Garrett Anderson Hosp Euston Road N W 1 —Hon asst obstetrician

Evelina Hosp for Sick Children, Southwark, S E 1 —H P, at rate of £120

Gordon Hosp for Diseases of the Rectum and Colon, Vauxhall Bridge Road S W 1 —Res surg O, at rate of £150

Guildford Warren Road Hosp —Asst M O, £350

Guy's Hosp, S E 1 —Medical officer for dept of V D, £350

Halifax General Hosp —Jun res M O, £250

Halifax Royal Infirmary —First H S, at rate of £200

Hertford County Hosp —Hon consulting physio therapeutist to dept. of physical medicine Also H S at rate of £200

Hosp for Sick Children Great Ormond Street W C 1 —Two H P s, and H S

Hull Beverley Road Institution —Asst M O, £350

Hull Royal Infirmary —Second H P at rate of £150

Iraq Basrah Port Directorate —Asst port health officer 70 dinars a month

King's College Hosp Denmark Hill S E 5 —Asst physician to children's dept

Leeds Jewish Hosp, Leopold Street —Res M O £200 married, £150 single

Liverpool, Smithdown Road Hosp —Res surg O, £350

London Corporation of the City of —Surgeon to the City of London Police Force and two asst port M O H's, each £600

London Chest Hosp, Victoria Park, E 2 —H P and H S at rate of £160 and £100 respectively

Macclesfield, West Park Hosp —Res M O £350

Maidstone, Kent County Ophthalmic and Aural Hosp —H S to ophth dept and H S to ear nose and throat dept, each at rate of £200

Manchester Ancoats Hosp —Asst M O for V D clinics 1 guinea per attendance

Manchester, Crumpsall Hosp —Res asst obstetrical officer, at rate of £250

Manchester, Park Hosp, Davyhulme —Asst. res M O to special depts at rate of £300

Manchester Hosp for Consumption and Diseases of the Throat and Chest —Asst M O for Crossley Sanatorium £200

Manchester Royal Children's Hosp Pendlebury —Res M O at rate of £150

Manchester and Salford Hosp for Skin Diseases —Two asst M O's £150

Manchester University —Pilkington fellowship in cancer research, £300

Middlesex County Council —Various appointments, £650 per annum to 3 guineas per week

Newcastle upon Tyne, Hosp for Sick Children —Hon physician Hon surgeon Two hon asst physicians Also two hon asst surgeons

Newport County Borough —Asst M O H, £600

Northampton St Andrew's Hosp —First asst. M O, £625

Nottingham General Hosp —Res anæsthetist and H S each at rate of £150

Oxford University —Research student in dept of clinical medicine, £300

Plymouth Prince of Wales's Hosp, Greenbank Road —Res surg O, at rate of £225 Also H S at rate of £120

Portsmouth Saint Mary's Hosp —Jun asst res M O £250

Portsmouth Royal Hosp —Sen H S, at rate of £175

Princess Beatrice Hosp Earl's Court, S W 5 —Res surg O at rate of £200

Princess Elizabeth of York Hosp for Children Shadwell E 1 —H S and cas O each at rate of £125

Princess Louise Kensington Hosp for Children, St Quintin Avenue, W 10 —Hon asst physician

Prison Service (England and Wales) —M O (class II), £525

Queen Mary's Hosp for the East End Stratford, E 15 —Radiologist £350 Outpatient officer at rate of £150 H P and two H S s each at rate of £120 Obstet H S at rate of £110–£130 Also registrar to ear nose and throat dept, 50 guineas

Reading, Battle Hosp —Res asst M O, £200

Royal Eye Hosp St George's Circus S E 1 —Refractionist to L C C children's dept, £[illegible]

Royal Free Hosp Gray's Inn Road W C 1 —Res cas O at rate of £150 Inpatient obstetric assistant Also third H P

Royal London Ophthalmic Hosp City Road E C 1 —First asst M O £150

Royal Naval Medical Service —M O s

St Bartholomew's Hosp E C 1 —Sen demonstrator of physiology

St Bartholomew's Hosp Medical College E C 1 —Lecturer in public health Also lecturer on forensic medicine

St Mark's Hosp for Cancer Fistula &c City Road E C 1 —Clin asst for outpatient's dept

St Mary's Hosp W 2 —Hon medical officer for electro therapeutic dept

Saint Pancras Dispensary, 39 Oakley Square N W 1 —Hon physician

Salford Royal Hosp —Two H S's each at rate of £125

Salvation Army, Mothers' Hosp, Lower Clapton Road, E 5—Jun res M O, at rate of £80

Samaritan Free Hosp for Women, Marylebone Road, N W 1—Pathologist, at rate of £250.

Sheffield Royal Infirmary—Two surgical first assts, each £300

Sheffield University—Professor of bacteriology, £1000 Also asst lecturer in pharmacology, £350

South London Hosp for Women and Children, Clapham Common, S W 4.—H S and H P, at rate of £100

Southampton County Borough—Sen asst school M O and asst M O H, £650.

Southampton Free Eye Hosp—H S, at rate of £150

Stoke-on-Trent, North Staffordshire Royal Infirmary—Hon asst surgeon

Stourbridge, Corbett Hosp—H.P and H S, at rate of £125 and £100 respectively

University of London, King's College, W C 2—Lecturer in physiology, £350

Walsall General Hosp—H S, at rate of £150

Wembley Borough—Deputy M O H, £700

West Bromwich, Hallam Hosp—H P, at rate of £200

West End Hosp for Nervous Diseases, Gloucester Gate, Regent's Park, N W 1—Hon asst surgeon Hon psychotherapists Also hon clin assts

West London Hosp, Hammersmith, W 6—Res cas O and res anæsthetist, each at rate of £100

Westminster Hosp, Broad Sanctuary, S W 1—Hon anæsthetic asst and registrar Also chief obstetric asst and registrar, £250

Wolverhampton Royal Hosp—Two H S's and H P, each at rate of £100

Woolwich and District War Memorial Hosp, Shooters Hill, S E 18—Surg reg., £100

York County Hosp—Res anæsthetist and second H S, £150

Medical Diary

May 20 to May 27

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1

Monday

Odontology 8 P M (Royal College of Surgeons, Lincoln's Inn Fields, W C 2), annual general meeting Mr S Wilson Charles · Influence of Bone Growth on the Developmental Movement of the Teeth Sir Frank Colyer · museum demonstration

Tuesday

Pathology 8 15 P M, visit to the Metropolitan Police Laboratory, Hendon

Medicine 8 30 P M, annual general meeting Dr Laurence Martin Autonomic Imbalance and Border-line States of Thyrotoxicosis Dr Ronald Bodley Scott Leucopenic Myelosis

Wednesday

Comparative Medicine 5 P M, annual general meeting Dr A S Griffith. Infections of Wild Animals with Tubercle Bacilli and other Acid-fast Bacilli Dr A Q Wells and Mr S J Edwards will also speak

Thursday

Urology 10 A M, annual general meeting Mr B W Windeyer, Mr Stanford Cade, Dr G E Vilvandré, Mr Walter Galbraith, and Dr Struthers Fulton Radiotherapy in Urology 2 30 P M, demonstration of cases illustrating end-results of radiotherapy Operations at hospitals

Friday

Urology 10 A M, Mr E W Riches Mr Victor Dix, Mr Hamilton Bailey, and Mr W E Underwood · Late Results of Conservative Treatment of Hydronephrosis 2 30 P M, operations at hospitals

Disease in Children 4 15 P M, cases 5 P M, annual general meeting Dr M Bryan (for Dr Helen Mackay) (1) ? Meningococcal Septicæmia Dr Beryl Barsby (2) Congenital Syphilis Associated with Tuberculosis

Epidemiology and State Medicine 8 15 P M, annual general meeting Dr I H Maclean and Dr. C E Bevan Cerebrospinal Meningitis in Cyprus

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

Tuesday—2 30 P M (11, Chandos Street, W 1), Dr P K McCowan, Dr J M C Speer, Dr T P Rees, Dr J T Curran, and Dr N H M Burke Recreational Therapy—its Use in Mental Disorders and Mental Defect

Pathological, Bacteriological, and Biochemical Subcommittee

Monday—8 P M (Central Pathological Laboratory, Denmark Hill, S E 5), Dr Joshua Carse Cytological Changes in the Blood following Cardiazol and other Convulsions

MEDICO-LEGAL SOCIETY

Thursday—8 30 P M (26, Portland Place, W 1), Dr L A Weatherly Insanity Defence in Murder Trials—a Debatable Practice of Procedure

BRITISH PSYCHOLOGICAL SOCIETY

Medical Section

Wednesday—8 30 P M (1, Wimpole Street, W 1), Dr E Guttmann and Dr W Mayer-Gross The Subjective Experience of Illness

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S W 1

Tuesday and Thursday—5 P M, Prof J A Ryle : Visceral Neuroses (Last Croonian lecture)

ROYAL SOCIETY OF ARTS, John Street, Adelphi, W C 2

Monday—8 P M, Prof E C Dodds : Modern Chemistry, Modern Medicine, and Modern Food (Last Cantor lecture)

INSTITUTE OF PSYCHO-ANALYSIS, 96, Gloucester Place, W 1

Tuesday—Dr Ernest Jones Evolution and Revolution.

TAVISTOCK CLINIC, Malet Place, W C 1

Monday—6 P M, Dr Emanuel Miller Mental Dynamics of the Unconscious

Wednesday—3 P M, Dr Cedric Shaw Gastro intestinal Syndromes 4 30 P M, Dr H Crichton Miller The Neurasthenia

Thursday—6 P M, Dr. Grace Calver : Methods of Diagnosis and Therapy (II)

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12

Monday—4 30 P M, Dr R C Wingfield Pulmonary Tuberculosis

Wednesday—Noon, clinical and pathological conference (medical) 2 P M, Dr D M Stone · Bacteriological Diagnosis of Venereal Disease, (I) Syphilis 3 P M, clinical and pathological conference (surgical) 4 30 P M, Prof A A Miles The Isolation of Bacterial Antigens

Thursday—2 15 P M, Dr Duncan White radiological demonstration 3 30 P M, Mr L Carnac Rivett Malignant Uterine Neoplasms

Friday—2 P M, clinical and pathological conference (obstetrics and gynæcology)

Daily, 10 A M to 4 P M, medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations

ST MARY'S HOSPITAL, W 2

Tuesday—5 P M (institute of pathology and research), Prof E D Adrian. The Instability of the Brain

ST GEORGE'S HOSPITAL, S W 1

Thursday—5 P M, Dr Desmond Curran psychiatric demonstration

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W C 1

Thursday—2 P M, Dr Donald Paterson The Leukæmias 3 P M, Mr A Simpson-Smith Diagnosis and Treatment of Peritonitis in Children

Outpatient clinics daily at 10 A M and ward visits at 2 P M

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES W 9

Thursday—3 P M, Dr Wilfred Harris. clinical demonstration

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W C 2

Monday—5 P.M, Dr G B Dowling Occupational Dermatitis

Tuesday—5 P M, Dr A C Roxburgh Syphilis

Thursday—5 P M, Dr A D Porter Endocrine Dysfunction and the Skin

Friday—5 P M, Dr A. M H Gray · Scleroderma and Allied Conditions

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W 1

Monday to Saturday—St John's Hospital, 5, Lisle Street, W C 2, afternoon course in dermatology (open to non-members)—Brompton Hospital, S W 3, Tue and Fri 5 15 P M., M R C P course in chest diseases

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION

Wednesday—4 P M (St James' Hospital, Ouseley Road, S W 12), Mr V Z Cope demonstration of surgical cases

MANCHESTER ROYAL INFIRMARY

Friday—4 15 P M, Dr J F Wilkinson demonstration of medical cases

HONYMAN-GILLESPIE LECTURE, EDINBURGH

Thursday—4 30 P M (Royal Infirmary) Mr J M Graham Surgical Aspects of the Treatment of Toxic Goitre

Births, Marriages and Deaths

MARRIAGES

Savage—Battershill—On May 12, at the Church of Our Lady of the Assumption, London, Surgeon Lieut Commander Stephen Julian Savage, R.N, to Elizabeth Battershill

DEATHS

Carling—On May 10, at Barton-on-Sea, Alan Carling, B M Oxfd, D P H, aged 33

Colyer—On May 11, Stanley Colyer, M D Lond, M R C P, of Mayfield, Sussex, aged 65

Fisher—On May 10, at Ringwood, William Fellowes Fisher, M B Durb, late of Ramsey, Hunts

Gideon—On May 13, at St Nicholas Hospital, Plumstead, G V M Gideon, M R C S, of Woolwich

Revell—On May 15, Hugh Stanley Revell, M R C S, of Hill Road, S W 18

Sandford—On May 12, at St Albans, Arthur Sandford, M D R U I, aged 81

Sarra—On May 13, at Reading, Edwin Roland Sarra M R C S

Seacome—On May 13, at Royal County Hospital, Arthur Frederic Seacome, L R C P E, D P H

N B—A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages, and Deaths

NOTES, COMMENTS, AND ABSTRACTS

LONDON'S OVERGROWTH

THE building of modern London is one of the great tragedies of English social history The fact of its growth is of secondary importance when compared with its manner One has only to visit the Scandinavian capitals to realise that a great city may be as pleasant to live in as a country village, but life in London is such that those who can afford to do so leave it every week-end London is ugly, uncoordinated and inefficient, and each day the jerry-builder extends its tentacles further into rural England, as a monument to the virtues of private enterprise Dr S Vere Pearson's "London's Overgrowth and the Causes of Swollen Towns" (London C W Daniel Co, 1939, pp 192, 8s 6d) deals with population industry, transport, open spaces, housing, and the pollution of the Thames, and it is necessarily gloomy reading Dr Pearson is a disciple of Henry George, and he finds the cause of London's overgrowth in rent more particularly ground rent, and in land values At great expense, public enterprise acquires land and builds a road through an undeveloped area At once the values of adjacent properties rise, and "development" by private individuals for profit begins He maintains that land belongs to the community and that occupiers should pay a rent to the community depending on the desirability of the land So public developments which increase land values would increase the rent available for the use of the community as a whole The rent should be collected and expended, he thinks, by a committee of users thus avoiding the evils of bureaucracy, and he maintains that this scheme would do much to rid the country of income tax, poverty, wars and crime, but he does not explain why such a committee should be more public-spirited or socially enlightened than a local or central government authority There is indeed a strong case for the nationalisation of land, which is what Dr Pearson's scheme amounts to, though he would probably object to the term But that it would automatically solve the problem of the maldevelopment of cities, or that some simpler solution is not available, is open to doubt The orderly Dutch have contrived to keep Holland beautiful by a simple expedient Each town has a beauty committee of its leading architects and no house may be built which does not meet with their approval As a result, new Amsterdam is as lovely as the old, and it ends abruptly in delightful country No doubt a few Dutch bank balances are the smaller but as a price for community happiness and beauty this seems worth while In the meantime, London is undergoing a revolution as socially important and disastrous as the industrial revolution, and we still await a Lord Shaftesbury to clean up the mess

DIPHTHERIA IMMUNISATION

Dr James Roberts, the medical officer of health for Hamilton, Ontario, sends us further details of diphtheria immunisation in that city (see *Lancet*, Feb 25, p 490) In 1921 Dr Roberts heard an account given by Dr Park of immunisation in New York City; on returning to Canada he secured the coöperation of the Hamilton board of health and school health service and began immunisation in January, 1922, some 500 pre-school children and 1000 school-children being immunised in the first year This was the first large-scale attempt in Canada to prevent diphtheria by immunisation, and it has been strikingly successful In 1922 there were 717 cases in the city and 32 deaths These figures had fallen to 121 and 3 by 1926, and to 11 and 1 by 1927 since 1931 there have been no cases at all (A chart showing the morbidity- and mortality-rates since 1905 was given by J G Fitzgerald and others in *The Lancet* of Feb 12 1938, p 391) Dr Roberts does not tell us the proportion of children now immunised but it must be very high for of the total population of 155,000 about 40,000 are said to attend schools and colleges, and in the last ten years 21,378 pre-school children and 14,413 school-children have been immunised—a total of 35 791 Infants are immunised from the age of six months up.

DEVELOPMENT IN SCHOOL LIFE

EDUCATION and medicine, the school and the clinic, the teacher and the doctor here are concepts, institutions, individuals, which, though functioning alongside of each other have, until comparatively recently, operated in separate compartments Education has been concerned, in the main, with the teaching of subjects and medicine with the treatment of defect and disease What matters primarily for the child and adolescent, however, is the contribution to the process of growth made by education and medicine working together with a common understanding and interpretation of the biological process of development from birth up to, say, 18 years

Mr Coade reminds us[1] that wholeness, as the hallmark of manhood, cannot come without wholeness in childhood and adolescence Biological development is concerned equally with body mind, and spirit, and neither teacher nor doctor is sufficiently trained in its significance, especially during the period of public-school life, which has received less attention from the biological standpoint than the younger ages The team collected by Mr Coade have produced a book which starts off with the material, discusses the makers (parent and teacher), passes on to the making, and ends with a chapter on vocational guidance In the opening chapter on physical education Mr P A Smithells observes that the ultimate test of any system is whether it fits the body for life, and that much has yet to be learnt of the connexion "between the physical and psychological behaviour of man, between moving and living" Disturbance of physical well being may be reflected in behaviour, personal and social In planning the time-table of a physical education programme Mr Smithells emphasises the need for rest as well as for activity Prof V H Mottram endorses this view, he is a believer in the midday rest, customary at some of the large public schools, for which far too little provision is made in elementary schools, even for young children As to diet, Prof Mottram judges, from considerable experience, that very few schools reach a high standard in the supply of protective foods He makes interesting suggestions about open air dormitories in boarding-schools advocating the use of venetian shutters rather than of large glass windows Dr Oswald Schwarz, formerly professor of psychology at Vienna contributes a long and weighty chapter on personality in normal and abnormal children. Prof Cyril Burt deals with delinquent tendencies in adolescent boys The need is not so much for a new and special care for the adolescent boy as such, but for a continuance of his moral, social and intellectual training when he leaves school for a more independent life Mr A S Neill writes with racy common sense on parents and Dr Graham Howe in a more obscure and whimsical manner on teachers

A collection of lectures[2] to a conference of public-school masters edited by Mr E D Laborde Ph D has comparatively little bearing on medicine, but includes striking chapters on religious education and one notable contribution by the director of physical education at Mill Hill School He applies the term to every branch of education in which movement plays a part and to the re-education of those below normal, and observes that the head of the department should hold rank with the other members of the staff, and have a good knowledge of academic subjects and a sympathetic understanding of the problems of his colleagues. There is much to be fitted into a school term and the goodwill of those who have hitherto claimed the boy's working hours is essential if time is to be found for continuous graduated physical training.

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[1] Manhood in the Making Edited by T J Coade, M A, headmaster of Bryanston School London Peter Davies 1939 Pp 317 10s 6d

[2] Problems in Modern Education Edited by E D Laborde Ph D assistant master at Harrow School [illegible] Cambridge University Press 1939 Pp [illegible]

PSYCHOLOGY AND PHYSIOLOGY

THE basic principle underlying a collection of essays and papers prepared for various audiences, not all of them medical, by Dr. Dru Drury is that physiology and the anatomy of the nervous system are closely linked with psychology[1] We welcome this attitude because writers of psychological books too often make it appear that the mental processes act in a world of their own This failure to show the relation between psychological medicine and the other medical sciences may well be one of the reasons why a knowledge of psychology is so slow in reaching the bulk of medical practitioners. Emphasis on such connecting links as can be found is therefore all to *the good. Dr. Dru Drury is obviously a man of wide* experience who has found time to study a great variety of subjects, and he is able to produce quotations and examples to illustrate his meaning from every field. This facility has the effect of leading him, at times, from his main theme, but it helps to make the book pleasant to read, and suggests that he must be an entertaining lecturer.

TUBERCULOSIS IN DOGS AND CATS

SYSTEMATIC studies recently carried out in Stockholm on tuberculosis in dogs and cats are recorded in *Acta Tuberculosea Scandinavica* (1939, 13, 103 and 125). Prof. Hjärre of the pathological institute of the Veterinary School has found a remarkable and uniform rise in the incidence of tuberculosis in these animals between 1908 and 1937. In the first ten years, tuberculosis was found in 1 8 per cent. of the 434 dogs examined post mortem, and in none of the 46 cats thus examined. In the next decade 2·1 per cent. of the 1270 dogs and 2 per cent. of the 147 cats examined were found to be tuberculous; in the third decade, the corresponding percentages were 5 4 and 4 8 for dogs and cats respectively. The canine breeds in which tuberculosis was found most frequently were fox terriers, several short-nosed breeds, and Irish setters. Tuberculosis was most prevalent in young dogs, and while there was no sex difference among one-year-old dogs, after the age of 2 years only about 27 per cent were bitches. A similar comparative liability of male cats to contract tuberculosis was observed. Typing of the bacilli found in 74 dogs showed the human type to be present in 70 per cent. and the bovine type in 30 per cent.; the human type was found in only 1 of 7 infected cats. The infection had evidently been contracted through the respiratory tract in 59 per cent. of the dogs, by the alimentary tract in 37 per cent, and by the skin in 4 per cent., in cats the corresponding figures were 40, 50, and 10. Dr. C. W. Herlitz of the Karolinska Institut gives an account of a study of canine and feline tuberculosis in relation to tuberculosis in man. His own investigations and the findings of a circular letter addressed to Swedish veterinary surgeons throughout the country have led him to conclude that between 20 and 30 per cent. of the dogs and cats found to be tuberculous had been in intimate contact with cases of human tuberculosis. It does not transpire from this study to what extent these domestic pets infected or were infected by the tuberculous human beings with whom they associated, but Dr. Herlitz is satisfied that those with open tuberculosis are a serious danger to their human contacts.

In Bucharest, of 1000 dogs examined post mortem at the laboratory of the Faculty of Veterinary Medicine, tuberculous lesions were found in about 2 per cent. (Mihailesu, M., Lupu, A, and Tomescu, V, summarised in *Vet J.* April, 1939, p 155). This figure only applies, however, to dogs which lived in contact with man, for of 6000 vagabond dogs examined the number found to be tuberculous was negligible, and it may also be significant that the tubercle bacilli found in the infected dogs were of the human type. Primary foci were found in equal proportions in the lung and intestine, and very rarely in the throat and skin. The risks of infection from dogs with pulmonary lesions must be small for elimination of bacilli from the lungs is only possible in the cavernous type of tuberculosis, which is rare in the dog. In Bucharest there is no evidence that the incidence of canine tubercle is increasing, at any rate in the last four years.

REDISCOVERY OF JENNER PORTRAIT.—We are informed by Messrs. E. P. Goldschmidt and Co *that the earliest known portrait of Edward Jenner,* which was rediscovered a short time ago at a country sale and was described and illustrated in THE LANCET, April 22, p. 966, has now been sold to a private collector in America

INTRASPINAL PERCAINE.—On April 8 (p 824) we published a report of a meeting of the North of England Obstetrical and Gynæcological Society at which Dr. H Burton of Salford described the technique of spinal analgesia in labour. According to the report he injected "9 minims of a heavy 10 5 per cent. solution of Percaine" The strength of the solution prepared by Messrs. Ciba and used by Dr Burton is, we are informed, 0·5 per cent. not 10·5.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 6, 1939

Notifications—The following cases of infectious disease were notified during the week: Smallpox, 0, scarlet fever, 1665; diphtheria, 784; enteric fever, 21 (32 "expected"); pneumonia (primary or influenzal), 773; puerperal pyrexia, 176; cerebrospinal fever 32, acute poliomyelitis, 3; acute polio-encephalitis 2, encephalitis lethargica, 2; continued fever, 1 (Poplar); dysentery, 32; ophthalmia neonatorum, 80 No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 12 was 3162, which included Scarlet fever, 649, diphtheria, 622 (carriers, 28), measles, [illegible] whooping-cough, 1066, puerperal fever, 22 mothers (plus 11 babies), encephalitis lethargica, 302, poliomyelitis, 2 At St Margaret's Hospital there were 22 babies (plus 10 mothers) with ophthalmia neonatorum

Deaths—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 3 (0) from measles, 1 (0) from scarlet fever, 13 (1) from whooping-cough, 25 (1) from diphtheria, 37 (3) from diarrhœa and enteritis under two years and 50 (6) from influenza. The figures in parentheses are those for London itself

Luton reported the only death from typhoid Fatal cases of diphtheria were scattered over 20 great towns, Manchester reporting 3, Croydon and Exeter each 3 At Bristol 5 deaths were attributed to influenza, 3 each at Birmingham, Rhondda, and Swansea Hull and Birmingham each reported 6 deaths from diarrhœa, Liverpool and Manchester each 4

The number of stillbirths notified during the week was 269 (corresponding to a rate of 40 per 1 total births), including 53 in *London.*

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[1] Psyche and the Physiologists By Edward Guy Dru Drury, M D Lond, D P H, lecturer on physiology and hygiene at Rhodes University College, Grahamstown, South Africa London: H. K Lewis and Co 1938 Pp 98 5s

ADDRESSES AND ORIGINAL ARTICLES

BACTERIAL INFECTION DURING INTRACRANIAL OPERATIONS*

BY HUGH CAIRNS, D M Oxfd, B S Adelaide, F R C S

NUFFIELD PROFESSOR OF SURGERY IN THE UNIVERSITY OF OXFORD CONSULTING SURGEON TO THE LONDON HOSPITAL

(From the Radcliffe Infirmary, Oxford)

AFTER major intracranial operations a not inconsiderable number of patients die from bacterial infection. The bacteria gain a foothold in a variety of ways and from various sources. Much is already known about operative infection from the work of bacteriologists and surgeons, but there does not exist, so far as I am aware, a comprehensive survey of the dangers of infection during an intracranial operation. The importance of the subject may be judged from the mortality figures of operations for intracranial tumours and allied conditions in my clinic from 1927 to 1938 (table I). Table II gives an analysis of the figures of one year in greater detail. In this particular year, it will be seen, 25 per cent of the operative fatalities were due to operative infection.

SCALP INFECTION

Scalp infection after an intracranial operation is not necessarily serious, but, when a brain tumour must be removed in stages at short intervals, the slightest unhealthiness of the wound, when it comes to be reopened at the second operation, may give rise to fatal meningitis. In my experience operative infection of the previously healthy and surgically cleaned scalp only occurs when the blood supply of the wound edges is impaired, as in infections in some other parts of the body, notably in the urinary bladder (Cairns 1925), accessory factors are in most cases of greater importance than the bacterial infection.

Suture of the galea aponeurotica by interrupted stitches of fine silk, introduced many years ago by Cushing, did away with the need for tight skin stitches. The next step was a broadening of the pedicle of the skin flap, which came from recognition of the fact that it is not necessary in osteoplastic craniotomy to preserve the attachment of the bone flap to the overlying scalp. The old frontal flaps (fig 1*a*) occasionally showed necrosis of the skin at the anteromedial angle, even in the hands of the most expert surgeons, the new type of frontal flap (fig 1*b*), introduced by Souttar (1928) gave more uniformly good skin healing. In this type of operation the bone of the flap usually lives, since its blood supply comes more from the temporal muscle and fascia, to which it is still attached, than from the overlying scalp. But even when deprived of all blood-supply the bone may still be replaced without in any way disturbing the healing of the wound.

In July, 1933, I removed a right frontoparietal meningioma from a woman aged 50. As shown in fig 2, there was an internal hyperostosis of the skull corresponding in extent to the surface of the intracranial tumour, and this hyperostosis contained nests of tumour cells. To have removed this hyperostosis without sacrificing the whole of the bone flap would have been difficult and would have resulted in a large bony defect. The bone flap was accordingly removed, was boiled for three minutes in the steriliser, and was then replaced in the wound, where, owing to its bevelled edges, it lay snugly without any sutures other than those of the overlying galea. The wound healed in the normal manner by first intention and has never given trouble. Radiograms taken five years after the operation show that the bone flap has united to the rest of the skull, and that the area of hyperostosis still appears as an area of increased density.

The principle of the frontal flap of Souttar has been applied over other parts of the cerebral hemisphere. The skin pedicle is always wide, the scalp is reflected, and then the bone flap can be cut with as narrow a pedicle as the thickness of the skull requires (fig 3). An incidental advantage of this method of craniotomy is that it minimises bleeding from the internal surface of the bone flap after operation and in consequence greatly reduces the risk of postoperative extradural hæmatoma, in addition, collections of fluid accumulating on the surface of the brain or dura after operation escape into the subaponeurotic space, whence they can be removed by aspirating needle during the first few days after operation. The skin flap quickly adheres once more to the underlying bone, and I have had but one case, a case of external hydrocephalus of unknown origin in an adult, in which a bag of fluid collected between scalp and bone and required repeated aspiration during a period of six months before it finally subsided. Although this method of separating scalp from bone in osteoplastic craniotomy has proved satisfactory, it is necessary to add that it does introduce a slight risk of osteomyelitis of the bone of the flap that was not present with the older method.

In prolonged operations the scalp may become infected as a result of constriction of its blood supply by the weight of hæmostatic clamps applied to the galea (fig 4). This variety of infection occurs particularly in the middle line of the forehead, where the scalp is less vascular and the galea more fragile than elsewhere. The remedy is the simple one of removing the clamps, after the first hour of a cranial operation bleeding from the scalp is so slight that most, if not all, the hæmostatic forceps can be removed, such scalp bleeding as still tends to occur being controlled by the pressure of gauze.

Procaine necrosis.—Procaine adrenaline solution is used in nearly all cranial operations in a number of clinics, not only in those cases operated on entirely under local anæsthesia but also for its hæmostatic effect in cases done under general anæsthesia. On rare occasions necrosis of the scalp has been reported after the use of procaine. I have not had such a case, though I have seen an area of skin necrosis following the use of procaine without adrenaline, before lumbar puncture, but one of my friends tells me that he had four cases of scalp sloughing in one week from procaine which on analysis proved to be grossly hypertonic. Procaine solutions tend to be acid and to become more strongly acid when heated but that acidity alone could be responsible for skin necrosis seems unlikely from the fact that insulin also an acid solution does not produce ill effects.

Thus in scalp infections the important factor is impairment of blood supply of the edges of the wound rather than the infective element which is probably always present, even in the most sterile conditions. To this I will refer later.

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* An address delivered before the Manchester Surgical Society, Feb 21 1939

BONE INFECTION

Osteomyelitis is a rare variety of postoperative infection It may be primary, or secondary to scalp infection, or may arise from perforation of the frontal sinus during craniotomy. I have seen three cases after operation for intracranial tumour, and there was no hint of meningitis in any of them. Two recovered on removal of the bone flap, and the third died from the effects of an incompletely removed tumour.

STREPTOCOCCAL DROPLET INFECTION

A great deal has been written on streptococcal droplet infection in recent years My own experiences occurred in 1934 and were reported to the Society of Neurological Surgeons in the following year.

In September, 1934, a patient died, thirty-six hours after complete removal of an acoustic neurinoma, from streptococcal meningitis of a most fulminating character One month later another patient, a child aged 7, died of streptococcal meningitis and ventriculitis six days after removal of a very large ependymoma from the lateral ventricle At this time throat swabs of the various people concerned with the operations showed that a positive culture of hæmolytic streptococci was present in my own throat. These streptococci were not typed against those of the fatal infections, but subsequent experiments (see below), undertaken with the help of Dr. Lowenthal, left little doubt that the throat infection was the source of the operative infection. It should be noted that I had had no symptoms of inflammation of the throat, and that on examination my throat was found slightly red but showed no other changes After two weeks, with no treatment other than gargling with Dettol, the streptococci no longer appeared in cultures of my throat.

Some years previously a similar outbreak of infection had been reported by Cushing (1931), and in his case the trouble had disappeared when a mask of sixteen layers of closely woven gauze had been substituted for one of eight layers. At the time when the outbreak occurred in my department a gauze mask of sixteen layers was in current use. Experiments of talking over a petri dish at the end of an operation showed that mouth bacteria, including hæmolytic streptococci, could get through this mask and grow on the blood-agar. Further observations showed that gauze masks soaked in dettol, thin linen masks, and masks composed of a mixture of gauze and linen were no barrier against droplet infection. All these masks were worn for an hour or more before testing, in order to reproduce the condition that obtains in operations

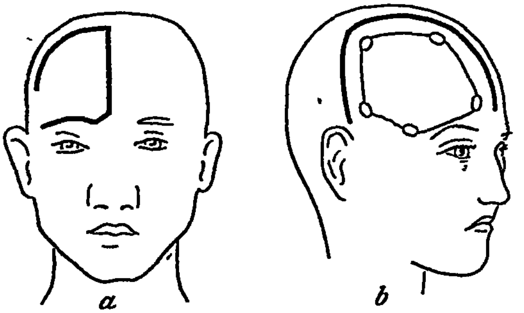

FIG. 1—Frontal scalp flaps: (*a*) old type, (*b*) new type.

Experiments were now undertaken with a mask [illegible] and Cellophane. This mask, designed by Blatt and Dale (1933) and modified by Debenham (1935), has now come into fairly general use It consists of a thin layer of cellophane between two layers of gauze. It allows the air to escape at the sides, but the droplets from the mouth are caught in the gauze The masks are sterilised in an autoclave All the experiments with this mask showed that it was impervious to bacteria, and that the air escaping at the sides was free from bacteria, presumably because the droplets were entangled in the gauze This mask has since been used as a routine by all persons, except the patient, who enter the operating-, sterilising-, and dressing-rooms, while work or preparation for work is in progress And since that time there has been no case of hæmolytic streptococcal infection

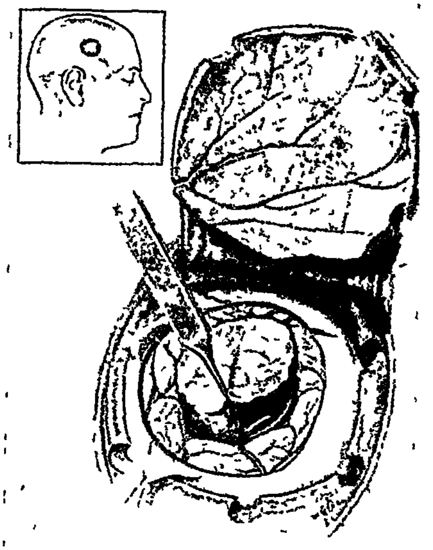

FIG. 2—Operation sketch of a case of frontoparietal meningioma with internal hyperostosis of the skull containing tumour cells.

Streptococcal infections of the throat in hospital workers appear to be becoming more common, and since they may occur without any symptoms, there is clearly no other way of preventing the risk of infection than by wearing an efficient mask.

The risk of droplet infection is probably greater in operations on the central nervous system than in other regions, partly owing to their greater duration and partly to the greater vulnerability of the brain and meninges Yet the risk in other fields of surgery cannot be negligible, as is shown by Paine (193 in an important paper on droplet infection. A patient died of streptococcal peritonitis on the fourth day after panhysterectomy, and a similar strain of streptococcus was shown by agglutination absorption tests to be present in the throats of two of the people present at the operation.

OTHER AIR-BORNE ACUTE INFECTIONS

In addition to the streptococcal infections we have had four cases of acute or subacute meningitis due to organisms hitherto regarded as saprophytes Dr. Panton isolated in three cases gram-negative bacilli of types that had been hitherto regarded as harmless to man and in the fourth case a *Diplococcus mucosus* which Cowan (1938) found to be capable of killing mice Two of these patients died, and the other two recovered The source of these infections was never traced Cough plates of the operating staff failed to yield similar organisms An organism identical with the infecting organism in one case was found in the air of the operating-theatre, but, as the theatre was one which was used by many other surgeons, satisfactory conditions for investigation could not be obtained

WATER-BORNE INFECTIONS

In one case of hydrocephalus in a young child, the result of meningeal adhesions in the posterior fossa, the simple operation of cerebellar decompression was followed by a fatal purulent meningitis due to a bacillus of the Sonne type This organism agglutinated to full titre Sonne serum and in all probability came from saline solution that was used for irrigating the field of operation Inquiries suggested that the saline solution had been imperfectly sterilised, but the operating theatre was one that was not under our control, and satisfactory investigations could not be made After that experience we have used only those saline and Ringer's solutions that come from an unimpeachable source

During investigations set in train by these distressing incidents it has been discovered that bags of powder used for the hands and gloves may contain living organisms, this is not surprising, since moist heat cannot penetrate to the centre of a bag of powder, and prolonged dry heat is therefore needed if powder bags continue to be used for the hands

AUTO INFECTION

The type of case that is included under this heading is that of the patient who is operated on for some intracranial lesion, such as a tumour, while suffering from streptococcal infection of the throat, and then develops a streptococcal meningitis I have not had such a case, and so far as I am aware there is no definite bacteriological proof that this type of auto-infection can occur However, a colleague in another city tells me that he has had three cases of this nature, and it behoves us to be on our guard when contemplating intracranial operations on patients with obvious or suspicious foci of infection, or with unexplained pyrexia The use of sulphonamide compounds is clearly indicated as a prophylactic in such of these cases as require operation urgently

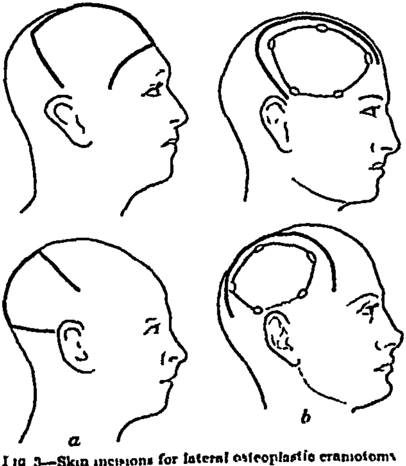

FIG 3—Skin incisions for lateral osteoplastic craniotomy (a) old types, (b) new types

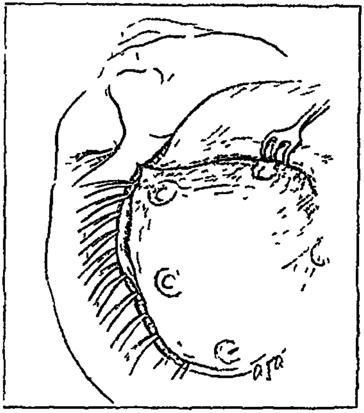

FIG 4—Constriction of scalp vessels in wound edge by clamps attached to galea aponeurotica.

Another variety of postoperative meningitis which may be discussed in this section is that due to intensification of pre-existing unrecognised meningeal infection The following case is an example

CASE 1—A child, aged 3, was admitted to the Radcliffe Infirmary on Oct 15, 1938, with a diagnosis of cerebellar tumour For four months before admission he had been having attacks of headache and vomiting of increasing severity and had become progressively unsteady in walking, irritable, and incontinent

Before the onset of the headache events had occurred the significance of which was not realised until after operation The child had not been in perfect health since March, 1938, when he had the first of three prophylactic inoculations against diphtheria, after each of these inoculations he had a severe reaction, consisting of drowsiness, anorexia and irritability, and it was a fortnight after the third reaction that the headache began

Examination showed slight enlargement of the head, papilloedema (3D in each eye), bilateral weakness of the external rectus muscle, generalised hypotonia, gross ataxia of the lower limbs, and diminished knee jerks and ankle-jerks The report of a lumbar puncture done before admission stated that the resting pressure was 300 mm, and that the fluid contained 0 1 per cent of protein and no cells

Operation was undertaken on Oct 27, 1938 on a diagnosis of cerebellar tumour On exposure of the posterior fossa no tumour was found, but instead a greatly distended cisterna magna the leptomeninx of which was thickened, in places flecked with white spots and lightly adherent both to the dura and to the cerebellar tonsils Part of the arachnoid was removed for histological examination

Sections of the arachnoid showed numerous aggregations of polymorphonuclear leucocytes small lymphocytes, and an occasional plasma cell throughout the thickened arachnoid

There was a stormy convalescence, followed soon by signs of meningitis and a steady increase of cells in the cerebrospinal fluid, up to 2000 per c.mm.,

TABLE I—MAJOR OPERATIONS FOR INTRACRANIAL TUMOUR, 1927–38

Year	Cases	Operations	Deaths	Case-mortality (per cent.)	Operation mortality (per cent)	Deaths from infection
LONDON 1927	5	6	1	20·0	16·6	..
1928	29	40	8	27·6	20·0	2
1929	37	46	8	21·6	17·4	1
1930	44	50	10	22·7	20·0	
1931	53	63	12	22·6	19·0	2
1932	97	112	14	14·4	12·5	..
1933	128	144	25	19·5	17·4	2
1934	115	130	23	20·0	17·7	6
1935	96	105	25	26·0	23·8	5
1936	120	138	12	10·0	8·7	3
1937–38	71	79	9	12·7	11·4	1
OXFORD 1938	51	55	3	5·9	5·4	1*

* Case 1 of this paper

mostly polymorphonuclear neutrophils. Cultures of the cerebrospinal fluid were at first sterile but eventually yielded on several occasions a pure growth of *Staphylococcus albus*. Numerous forms of drainage and the usual drugs were tried, but the child gradually sank and died on Dec. 5, 1938.

Comment—This was clearly a case of low-grade pyogenic meningitis following inoculations against diphtheria, which had been stirred up by operation Had the true nature of the case been recognised before operation, it is probable that recovery with preservation of vision might have been obtained by repeated lumbar punctures.

LOW-GRADE AIR-BORNE INFECTIONS

There is a variety of low-grade operative infection which, though not followed by suppuration in the meninges, is nevertheless very serious in effects It occurs particularly after removal of tumours from the posterior fossa, from the vermis and cerebello-pontine angle, when the cisterna magna and other large cisterns have been opened It is slow in onset, and the preliminary manifestations consist usually of slight fever and pleocytosis of moderate degree in the cerebrospinal fluid, usually less than 500 cells per c.mm With suitable methods organisms can usually be cultivated from the cerebrospinal fluid—*Staph. albus*, *Micrococcus tetragenus*, and other so-called saprophytic organisms. The result of this low-grade infection is not a pyogenic infiltration of the meninges but rather an adhesive meningitis, which accentuates the hydrocephalus that the operation was designed to relieve and may even be fatal. In the terminal stages the infecting bacteria are numerous in the fluid of the lateral ventricles, which is nevertheless still quite clear and watery and may contain only 10–20 cells per c.mm. I described such a case in 1935 (Cairns 1935).

VULNERABILITY OF MENINGES TO INFECTION

It has been stated that brain tissue has little resistance to infection (Cowan 1938), but in the light of my experience it is probably more correct to say that it is in the cerebrospinal pathways rather than in the brain that resistance is feeble. Practically all the cases of operative intracranial infection that I [illegible] encountered, as opposed to scalp and bone infection, have been cases in which there was a wide opening of the ventricular or meningeal spaces After removal of tumours from the cerebral hemispheres without opening the ventricle, meningitis develops with the utmost rarity, notwithstanding the fact that cocci can sometimes be seen in, and even cultivated from, material aspirated from the bed of a tumour a few days after operation. Contamination of the brain with organisms has frequently occurred during the course of operation for brain abscess, and no meningitis or other sign of intracranial infection has occurred The following is an example.

CASE 2.—A boy, aged 6, had right frontal abscess following a small infected wound of scalp twelve weeks before. At operation on Jan. 24, 1939, a frontal flap was made, part of the right frontal lobe was resected and an encapsulated abscess was removed. During removal the abscess ruptured, with contamination of the exposed brain. Cultures of the pus of the abscess yielded a profuse growth of *Staph. aureus*

After operation there was no trace of meningitis The lumbar cerebrospinal fluid contained 28 cells (Jan. 26) and 8 cells (Feb. 1) per c mm. and less cells on subsequent occasions.

It might be argued that this patient already had a high resistance to *Staph aureus*, and that this was the reason why infection did not become generalised But the following case is a somewhat similar experiment, in which infection of the bone occurred, thus showing that the tissues of a patient infected with *Staph aureus* are not necessarily immune

CASE 3.—A male aged 17. In this case operation was undertaken for left temporal abscess on Nov. 22, 1938, after a four weeks' illness of headache and vomiting A left osteoplastic flap was made, and

TABLE II—MAJOR OPERATIONS FOR INTRACRANIAL TUMOUR, 1936

—	Cases	Operations	Deaths	Case-mortality (per cent)	Operation mortality (per cent)	Deaths from infection
Metastatic ..	1	1	..		..	..
Glioma sp multiforme ..	6	6	..	..	..	..
Medulloblastoma ..	5	5	..	..	..	..
Cerebral and pontine astrocytoma	10	13	2	..	..	..
Gliomatosis of meninges ..	1	1	..	..	..	..
Ganglioneuroma ..	1	1	..	..	..	..
Ependymoma	4	4	1	..	..	1
Oligodendroglioma ..	4	5	..	..	..	..
Cerebellar astrocytoma ..	11	12	1	..	..	..
Unclassified glioma ..	5	7	2	..	..	..
Total ..	47	54	..	12·7	11·1	..
Pituitary adenoma ..	10	12	3	30·0	25·0	..
Meningioma	21	27	2	9·5	7·4	1
Acoustic neurinoma ..	8	9	..	..	..	..
Blood-vessel tumours and malformations ..	7	7	..	..	..	
Cholesteatoma	3	4	..	..	..	..
Cysts of third ventricle ..	3	3	1	33·3	33·3	1
Tuberculoma	1	1	..	..	..	..
Tumours of skull	1	1	..	..	..	..
Inflammation unspecified	2	2	..	..	..	
Unverified tumours ..	16	17	..	..	..	..
Total	120	138	12	10·0	8·7	3

OTTAWA CIVIC HOSPITAL

the dura was not opened About 10 c cm of pus were aspirated from the abscess, and the flap was replaced The pus from the abscess yielded *Staph aureus* General recovery was excellent, but localised osteomyelitis developed in the flap, and the wound did not finally heal until sequestrectomy was done on Jan 18, 1939 The highest cell count obtained in the cerebrospinal fluid after operation was 39 per c mm

Comment—From these observations the presumption is that the brain has considerable resistance to infection It is the cerebrospinal spaces that are vulnerable, and it seems that bacteria from the air cannot gain effective access to these through the narrow sulci of the cerebral hemispheres but only through the widely opened cisterns and ventricles Even then the infecting organism must be able to gain direct access Thus, in subfrontal exploration of the pituitary region the cisterna chiasmaticus is always widely opened, but infection is practically unknown in this operation This is probably due to the fact that the channel of exposure leading to the cisterna chiasmaticus, like the necks of Pasteur's and Lister's flasks, is narrow and tortuous, organisms dropping into the wound on minute particles of dust fall on to the outer surface of the dura covering the convex surface of the frontal lobe and not into the chiasmal region

On the score of minimising the risks of infection, as well as for other reasons, there is a clear indication to conserve the arachnoid cisterns as much as possible during operations Thus, in exposure of the cerebellum for removal of an acoustic neurinoma it is better not to open the cisterna magna but to limit dissection of the arachnoid to the cerebellopontine cistern over the tumour

ATMOSPHERE OF OPERATING THEATRE

From the experiences reported above it is clear that the bacterial content of the atmosphere of the operating theatre is of considerable importance In 1936 during operations cultures were made on agar and blood agar plates The petri dishes measured 9 cm in diameter and were thus about the same size as the area of brain exposed, they were placed on the instrument table alongside the field of operation The operating theatre had an inlet fan which pumped air through a filter of oil and through a wet screen of dettol, but unfiltered air also came in through the cracks in the door, which opened on a main corridor The theatre floor was scrubbed out each morning before operation and was sprayed with dettol at intervals throughout the operation The culture plates were incubated for forty eight hours at 37° C

In twenty seven operations which varied in length from 1½ to 10 hours, the average time being about 4 hours, the culture plates accumulated *Staph albus* at the average rate of 23 colonies per hour, and of these 0-50 per cent were hæmolytic, *Staph aureus* accumulated at the average rate of 0 7 colonies per hour The number of colonies appeared to depend on the number of people in the operating theatre In this group of twenty seven cases two patients died of other causes, both soon after operation Of the remainder all had first intention wounds and no trace of sepsis, except two One of these developed osteomyelitis due to *Staph albus* in a bone flap, after a ten hour operation for removal of a large meningioma of the falx, the infection began in the bone, and there was no trace of infection of the meninges, the bone flap had to be sacrificed before the wound finally healed The other patient, from whom a frontal astrocytoma was removed, had a first intention wound and no trace of meningeal infection, but fluid accumulating beneath the galea aponeurotica in the first forty eight hours after operation showed in films an excess of leucocytes, together with gram-positive cocci and gram negative bacilli, and in cultures yielded a growth of *Staph albus* This patient made a satisfactory recovery

Of the twenty seven operations there were some six cases in which there was gross exposure of the meningeal spaces, but in none of these was there any trace of infection In this operating theatre, as in others examined, plates left exposed over a weekend, when the door of the theatre was locked, showed few or no bacterial flora in the air, in one case no colonies, in another 28 colonies of *Staph albus* in forty four hours and none of *Staph aureus*

Subsequent experiences in another theatre, which differs from the first in not opening off a main corridor, in being furnished with filtered air under a positive pressure, and in having much less traffic, the bacterial counts have been lower (10 colonies of *Staph albus* per hour and none of *Staph aureus*) Furthermore, there have been no cases of sepsis in some eighty major intracranial operations, with the two exceptions mentioned in this paper (cases 1 and 3), neither of which was an infection from without

Both these theatres are probably above the average for sterility in this country In other theatres, where conditions are not under control, and where septic operations may follow closely upon sterile operations the chances of infection are probably considerably greater The work of Colebrook at Queen Charlotte's (White 1936) on transmission of hæmolytic streptococci by dust leaves little doubt about the possible consequences of mixing cases of streptococcal infections with other cases These workers found that hæmolytic streptococci could survive in dust for ten weeks and longer

Hart (1937, 1938), who has made a careful study of the bacteriology of operating rooms, has found that the number of bacteria in the atmosphere varies directly with the number of people present, and he has concluded that the bacteria arise from the noses and throats of the people in the theatre, notwithstanding efficient masking An alternative possibility exists that the bacteria are present beforehand in particles of dust, and that the presence of the people stirs up the dust There are evidently considerable local variations in the flora of operating theatres for example, Hart at Duke University, North Carolina, found as many as 78 colonies of *Staph aureus* per hour on a plate of blood-agar, and most of his infected cases of thoracoplasty were due to this organism (Hart and Gardner 1937), whereas in London the highest figure we obtained for *Staph aureus* was 3 6 colonies per hour, and most of the intracranial infections were from other organisms

PREVENTIVE MEASURES

From these observations it is clear that in intracranial operations there are many risks of infection to be added to those that result from imperfect sterilisation of ligatures and instruments, from careless skin preparation, and from contact of the operating team with unsterile objects For the neurosurgeon the ritual of an intracranial operation is incomplete without much preparatory work With the aid of his bacteriological colleagues he must satisfy himself of the efficacy of the steam steriliser (Rishworth 1938), of the methods of preparing ligatures of the purity of the water supply and the sterility of his lotions He must insist on the use of an efficient mask by all who enter the operating-rooms or sterilising-rooms while operations or preparations for operation are in progress.

The most difficult problem is that of excluding air-borne infection. "The septic energy of the air," as Lister called it, was at one time regarded as the most potent factor in wound infection, but it came to assume a secondary importance for various reasons, not the least of these being the development of abdominal operations and the manifest power of the peritoneum to render innocuous the bacteria of the atmosphere. In recent years the development of surgery in other fields and the increase of streptococcal throat infections have shown once more the importance of air-borne infection.

The operating-theatre for intracranial surgery should be one that is reserved for non-septic cases; it should be suitably shielded from main corridors and supplied with filtered air under positive pressure. Movement stirs up dust, even in the cleanest operating-theatre, and should be at least reduced by providing a separate entrance and gallery for onlookers Even with these precautions the air of the theatre still contains a considerable number of bacteria when there are people moving about in it, and several methods have recently been introduced to render the air of the operation field sterile Hart (1937) has attached an ultraviolet light to the operating-theatre spot-light and finds that with certain wave-lengths and intensities it sterilises the atmosphere about the field of operation [†] Pulvertaft, Lemon, and Walker (1939) have recently advocated the use of certain antiseptic solutions in extremely fine suspensions by means of an electrically operated spray; this method is simple to apply and should have wide applications if its early promise is fulfilled Electrostatic precipitation of dust is a method employed in some French operating-theatres of recent design. Sterilisation by heat is used in some bacteriological laboratories by means of a simple form of apparatus devised by Junker. This consists of a narrow upright metal tube about 2 metres high, open at the top and provided with a bunsen burner at its lower end It stands near one side of the room, and the air passing through it becomes sterilised Walbum and Reymann (1937) found that by this process bacterial counts were reduced to 6–7 per cent. of their original number.

The advantage to the patient of raising the bactericidal property of his blood and spinal fluid by the use of sulphonamide compounds before any operation involving particular risks of infection is one that should not be overlooked.

The preventive measures to be taken during operation include, in addition to the usual gentle handling of tissues, measures to conserve the blood-supply of the scalp, protection of the bone and surface of the brain by means of sheet gutta-percha or sterile wool, and conservation where possible of the arachnoid membrane Of equal importance is the elimination of unnecessary movement The intracranial operation is clearly not an occasion for display

It is possible that drainage of cerebrospinal fluid might diminish the risks of low-grade infections, especially in cases of hydrocephalus We have evidence that the insertion of a drain may be followed by streptococcal infection of a cerebrospinal space previously not so infected, and this suggests a preference for intermittent drainage by repeated puncture of the tumour bed or ventricle

The results of major operations for intracranial tumour in my department are seen in table I. The great improvement that has taken place in the last three years is due to a number of causes, of which one is the greatly lowered incidence of infection In this series operative infection was greatest in 1934–36, at a time when surgical procedures had become more radical and deaths from other causes had been considerably reduced. Doubtless many cases in earlier years were infected at operation but died of other causes before the infection had time to develop

To what extent the mortality and morbidity of operations in other fields is influenced by operative infections is a subject on which a critical inquiry in this country would be of great interest.

SUMMARY

In a 12-year series of major operations for intracranial tumour and allied conditions the incidence of bacterial infection has been studied There were 968 operations on 846 patients, and the deaths from infection numbered 23 The fatal cases included infections from *Staphylococcus albus* and *aureus*, streptococcus, *Diplococcus mucosus*, *Micrococcus tetragenus*, a bacillus of the Sonne type, and gram-negative bacilli hitherto regarded as harmless to man Until special measures were taken the incidence of intracranial infection increased as the operative mortality from other causes diminished.

In spite of what have hitherto been regarded as adequate precautions to ensure sterility, infection of the wound may come from the air of the operating theatre, from the throat of the surgeon and his staff by droplet infection, or from the patient himself

The brain itself is shown to offer considerable resistance to bacterial infection. Most fatal intracranial infections are due to inoculation of the infecting organism into the larger subarachnoid spaces, or into the ventricles Mild infections of the basal cisterns without gross pyogenic reaction can be fatal by producing adhesive meningitis.

The measures for prevention of intracranial infection include systematic checking of the efficiency of sterilising and operative technique, methods to diminish the bacterial content of the operating-theatre, adequate masking of the people in the operating theatre, administration of sulphonamides before operation in certain cases, conservation of the blood supply of the scalp in all cases, and so far as possible of the arachnoid membrane in operations involving the basal cisterns

To many bacteriological friends, and in particular Dr. P. N. Panton, Prof. S P Bedson, F.R.S, Prof. A. D. Gardner, Mr. R. L. Vollum, D.Phil., Dr. W. H McMenemey, and Dr H. Lowenthal, I am indebted for assistance and advice.

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[†] Drever and Campbell-Renton (1936) have made careful studies of the action of ultraviolet light on different bacteria and have shown that the relative bactericidal effect in the spectral line varies according to the microbe exposed

A SIMPLE METHOD FOR MEASURING CLOT-RETRACTION

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The retraction of newly formed blood clots is often observed but seldom measured, yet for many years it has been remarked that certain pathological states may be accompanied by obvious alterations in its efficiency As long ago as 1822 Duncan recorded that the clotted blood from a patient with hæmorrhagic purpura did not exude its serum In 1896 Hayem drew attention to the association between thrombopenia and reduced retraction that is now a familiar clinical and experimental finding He observed, however, that retraction might be reduced without a diminution of platelets in pneumonia Cases of "thrombo asthenia" (athrombopenic purpura hæmorrhagica) described by Glanzmann (1918), jaundice by Carr and Foote (1934), bronchitis by Paviot and Chevallier (1930), and the rabbits implanted with new growth by van Allen (1927) also showed a reduction in clot retraction with a normal platelet count

Since these observations appear to be of clinical and academic interest, it is curious that, for the most part, they rely on some arbitrary standard and not on actual measurement It is true that methods of measurement have been devised by several workers, including van Allen (1927), Fonio (1926), and Tocantins (1935), but these are not sufficiently exact or are too complicated to be widely used The method to be described here should be found useful, since it is simple and seems to give results that are consistent enough for ordinary purposes

METHOD

The apparatus required consists only of a graduated centrifuge tube with the scale marked in 0 1 c cm divisions, a glass rod, and a cork to fit the mouth of the tube, bored to receive the rod as an easy sliding fit The rod is about ½ in longer than the tube and has a small "button" expansion formed about ½ in from one end

Retraction is measured as follows Rather more than 5 c cm of blood is obtained by venepuncture The centrifuge tube is filled from the syringe up to the 5 c cm mark The glass rod is put into the tube, so that the expansion is immersed in the blood, and the cork is fitted, the projecting end of the rod passing through the hole bored to receive it The tube is then placed in a water bath at 37° C and examined from time to time for coagulation of the contained blood An hour after firm clotting it is removed from the bath If retraction has taken place, the clot will be seen to have shrunk away from the walls of the tube and to be attached to the rod only By sliding the rod upwards through the cork, the clot, supported on the expansion, can be raised clear of the expressed fluid, so that the volume of the latter may be measured directly on the graduated scale (fig 1)

Retraction is expressed in terms of this volume, as a percentage of the original volume of blood Thus, if 5 c cm of blood, after clotting, express 3 c cm of fluid, the retraction is $\frac{3\times 100}{5}=60$ per cent

In measuring retraction in this way it is necessary to ensure that the graduated tubes are perfectly clean and are unscratched inside, otherwise the clot may stick to the glass and prevent retraction Clots that have stuck may be freed by carefully passing a fine stiff wire round the inside of the tube, keeping it in contact with the glass The tube should then be incubated for a further period of an hour

RESULTS

With the method described the following experiments were carried out —

(1) *Time required for completion of normal clot retraction* —Blood was taken from ten normal donors and estimations of retraction made in each case The first readings were made 50 min after coagulation The clots were replaced carefully and further readings taken at 10 min intervals for 40 min A final set of readings were made twenty four hours later In the first 10 min period, ending 60 min after clotting, five tubes showed an increase of 0 1 c cm in the volume of serum, equivalent to 2 per cent retraction During the next three periods no further increase took place in any tube Twenty four hours later it was found that in two tubes there was an increase of 0 1 c cm compared with the last reading taken the previous day Retraction was therefore practically complete 60 min after clotting, and for ordinary purposes it appears that the occasional slight increase during the next twenty four hours can be neglected An hour is thus the optimal time for a single reading to be taken, since any delay in retraction will be revealed

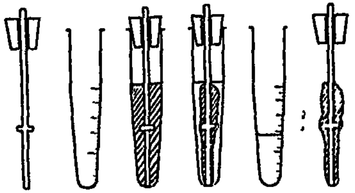

FIG 1—Diagram showing glass rod, cork, and graduated centrifuge tube, and method of removing clot to measure serum expressed

(2) *Error of the method* —Blood was obtained from a patient requiring venesection and was immediately measured by pipette into twenty five retraction tubes These were incubated together, and 60 min after coagulation retraction in each was measured Readings ranged from 46 to 54 per cent, though nineteen observations lay between 50 and 52 per cent The mean was 50 03 per cent, the standard deviation 1 76, and the coefficient of variation 3 52 per cent Taking the limits as M±3σ, it will be seen that in any one sample of blood separate estimations of retraction are unlikely to differ from the mean by more than 5 2 per cent

(3) *Normal limits of retraction* —Blood was obtained from fifty normal donors (twenty seven males and twenty three females) ranging from 16 to 45 years of age Retraction was measured in each case, a single reading being taken an hour after clotting The results obtained are shown in the form of a histogram in fig 2 They range from 48 to 64 per cent The mean is 54 72 per cent, the standard deviation 3 6, and the coefficient of variation 6 58 per cent Taking the limits as M±3σ, the normal range is 43 9–65 5 per cent

Other experiments were made to determine the effect of various factors on retraction I hope to publish details elsewhere; therefore only the following conclusions relevant to the present communication will be given now.

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* Assisted by an expenses grant from the Medical Research Council

(4) *Effect of temperature*—A rise in temperature causes an increase both in the rate and maximal extent of retraction, until about 47° C. is reached Above this point retraction is inhibited

(5) *Effect of platelets* — Below a variable figure in the neighbourhood of 100,000 per c mm a reduction in the number of platelets is accompanied by a reduction in retraction

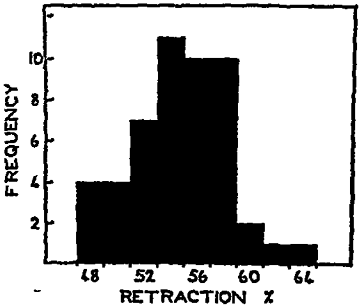

Fig. 2—Histogram showing frequency distribution of retraction readings from 50 normal persons

(6) *Effect of varying cell volume.*—The question of the effect of varying cell volume on retraction is clearly important in view of the common occurrence of anæmia in pathological states. Briefly, my findings in this connexion were as follows:—

(*a*) Plasma clots retract more rapidly than whole blood and to about 90 per cent. of their original volume. Therefore normal clot-retraction will always be brought to a standstill by the volume of cells contained in the clot, if this exceeds 10–15 per cent. of the original volume of blood. It follows that a reduction in cell volume is followed by an increase in retraction.

(*b*) The relationship between the increase in normal retraction and the decrease in packed cell volume is approximately linear, with a ratio of 0·7–0 8 The escape of some of the cells into the serum partially accounts for this ratio being less than one.

(*c*) This relationship does not apply when, in abnormal cases, retraction is deficient In such cases retraction may be brought to a standstill not by the volume of the cells contained in the clot but by an inherent inability of the fibrin to contract to the extent normally attained. Under these conditions it is clear that a reduction in cell volume cannot increase the extent of retraction.

Thus, whereas it is possible to correct by a simple calculation for the effect of anæmia if retractibility is normal, no such correction can be applied if it is deficient Hence the application of a correction to pathological cases will produce a distortion, since deficient retraction will be revealed in anæmic cases more often than in those with a normal cell volume. For example, a case with 50 per cent. retraction and 45 per cent cell volume would be considered normal but would be obviously abnormal if the same retraction figure was obtained when the cell volume was 25 per cent.

Figs. 3A and B give a graphic representation of these points and show the relationship between packed cell volume and retraction in two experiments made with normally and abnormally retracting blood-clot.

(7) *Clot-retraction in pathological conditions.*—Clot-retraction was measured in the way described in 250 pathological cases Most of these were not selected, being obtained during the collection of blood for routine pathological examination The investigation was carried out not with the idea of obtaining conclusive evidence on the association of an alteration in retraction with any particular condition but merely to gain an indication that such alterations exist No correction for anæmia was applied, for the reasons already given, but hæmatocrit and sedimentation-rate readings were obtained in every case Only an abnormal reduction in retraction was observed. High readings were obtained in anæmia, but none of them exceeded the calculated normal figures by a significant amount The results are not easy to analyse, since they are not always clear-cut. Table I shows the conditions in which retraction was definitely reduced in some cases

TABLE I—CLOT-RETRACTION IN PATHOLOGICAL CONDITIONS

Condition	Cases	No with abnormal retraction	Retraction *percentage if* abnormal
Bronchitis .	12	3	32, 34, 38
Hypertension and nephritis .	12	2	22, 28
Jaundice	16	10	0, 0, 20, 26, 26, 30 34, 34, 36, 40
Lymphadenoma ..	4	1	36
Myelomatosis ..	2	2	0, 0
Pneumonia (lobar)	12	6	22, 24, 32, 36, 38, 3
Pyogenic infection	20	4	26, 38, 38, 40
Thrombopenic purpura .	7	7	Nil in all

In a further series of conditions the retraction readings fell within normal limits (table II) The remaining cases represent a miscellaneous series of conditions, and in these the alterations were too indefinite to justify inclusion.

The conditions that appear to be most often associated with a failure of retraction are jaundice lobar pneumonia, and thrombopenia Of the 10

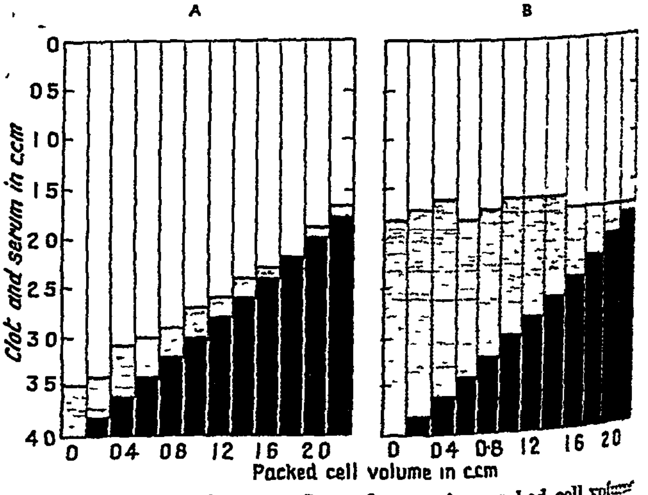

Fig 3—Diagrams showing effect of increasing packed cell volume on (A) normal, and (B) deficient clot-retraction The length of the white columns represents the volume of serum expressed, the height of the shaded columns above the base line the volume of clot after retraction, and the height of the black columns the volume of packed cells.

cases of *jaundice* with deficient retraction 4 were definitely due to obstruction, 3 were said to be catarrhal, 1 was associated with cirrhosis of the liver, and 2 were unspecified The loss of retraction apparently did not depend on the depth of the jaundice, since the highest van den Bergh figures were obtained in groups in which retraction was normal Two of the 16 patients had hæmorrhagic tendencies with prolonged prothrombin times, and both bled badly after operation In one, retraction was normal, and in the other it was deficient In the cases of *pneumonia*, 6 were investigated during the height of the disease, and 6 shortly after the resolution In the first group 5 gave low retraction readings and 1 was normal In the second, 5 were normal and the 1 giving a low reading had an empyema Though only 2 cases have been observed, the failure of retraction in *myelomatosis* is of interest, since a similar finding had been recorded by Stewart and Weber (1938) In all the foregoing cases platelet counts were not made, but stained films were examined in each case, and the presence of abundant platelets was confirmed

TABLE II

Condition	Cases	Condition	Cases
Athrombopenic purpura	4	Diabetes	5
Hæmophilia	4	Rheumatism and arthritis	11
Telangiectasia	4	Bronchopneumonia	4
Scurvy	3	Thyrotoxicosis	5
Pernicious anæmia	7	Tuberculosis	0
Other anæmias	9	Peptic ulcer	27
		New growth	27

The cases of thrombopenic purpura consisted of 4 cases of idiopathic purpura hæmorrhagica, 2 of acute leukæmia, and 1 of aplastic anæmia The platelet counts varied from 28,000 to 70,000 per c mm As regards the other hæmorrhagic states it is interesting to note that the 4 cases of athrombopenic purpura hæmorrhagica had normal clot retraction This condition is presumably that described by Glantzmann (1918) as "thromboasthænia" and by von Willebrand (1931) and others as "pseudo hæmophilia" It is strongly hereditary, may be passed directly from an affected person to the children, and affects males and females There is a hæmorrhagic tendency resembling the more familiar thrombopenic purpura, but the platelet count is normal In all the cases recorded here the bleeding time was greatly prolonged, varying from 30 min to over 2 hours, with normal platelet counts

No significant correlation could be found between the erythrocyte sedimentation rate and retraction in 100 cases in which the factor of anæmia was eliminated

SUMMARY

(1) A method for measuring clot retraction is described

(2) The error of the method and the normal limits of retraction have been estimated

(3) The effects of such factors as variation in temperature, number of platelets, and red cell volume have been discussed.

(4) In a series of 250 pathological cases it was found that retraction might be reduced in jaundice, lobar pneumonia, myelomatosis, and other conditions, apart from those with an obvious reduction in the platelets

(5) In the hæmorrhagic states, retraction was normal in hæmophilia, telangiectasis, and athrombopenic purpura hæmorrhagica Only in thrombopenic purpura was it reduced

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COMPOUND FRACTURES OF THE SHAFTS OF LONG BONES

By Henry Poston, M Ch Belf , F R C S E
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These remarks are based on the treatment, personally conducted, of 173 consecutive cases of compound fracture in which there was no interference with the vitality of the limb by reason of gross injury to its nerve and blood supply, and in which the limb was apparently viable and amputation was not clearly inevitable I have omitted 3 cases of circular saw injury to the upper extremity, resulting in almost complete amputation

AVOIDANCE OF SHOCK

It is generally accepted nowadays that a compound fracture is a surgical emergency of the greatest urgency The earlier treatment is undertaken the greater the chance of eliminating sepsis, and treatment should be carried out within six hours of the accident There is, fortunately, seldom much cause for delay, for patients with compound fractures of the long bones, unless there is a concurrent injury elsewhere, seldom suffer from severe shock In a patient suffering from a compound fracture who is evidently shocked or blanched, it is imperative to look elsewhere for further injury—abdominal, thoracic or cephalic

Certain mistakes in the management of these injuries can, however, produce profound shock The application of a tourniquet is a very common feature of the first aid treatment of compound fractures Especially in fractures of the tibia, where the nutrient artery is large, the hæmorrhage can be smart but in most cases it can be controlled by pressure Main arteries may sometimes be involved thus I have seen the anterior and also the posterior tibial artery cut cleanly across and bleeding actively, but on the whole this type of complication is rare It therefore seems best to instruct those responsible for the first aid treatment of these injuries to refrain from applying a tourniquet for hæmorrhage but to try to control bleeding by pressure bandaging with alternate layers of wool between the turns of the bandage Apart from the grave shock manifested on the removal of the tourniquet, there is no doubt that most "road tourniquets" act as a sort of Bier's bandage and cause the patient to lose more blood than if he had been left alone. In the case of the upper extremity the use of rubber-tube tourniquets should be avoided, for they may gravely interfere with the nerve-supply of the arm. Another shock-producing factor is the so-called preparation of the patient. All interference with the limb in the wards by shaving, or washing the skin with antiseptics should be avoided, for this procedure is extremely painful and may be almost intolerable to the patient, and is usually, at best, incomplete. It is advisable to postpone any form of skin preparation until the patient has been brought into the operating-theatre and anæsthetised.

While these patients as a rule show little initial shock, there is no doubt that factors such as those mentioned will produce profound shock I have also discarded spinal anæsthesia in treating compound fractures of the lower extremity owing to the fall in blood-pressure produced.

GENERAL TECHNIQUE

Under general anæsthesia the part is shaved and the skin cleaned There is no necessity to apply any strong chemical grease-solvent preparation It is better to avoid coloured antiseptics and finish the preparation with spirit or Harrington's solution, for in this way the colour of the skin can be accurately observed. The usual prophylactic treatment is given Tetanus antitoxin, gas-gangrene antitoxin polyvalent, and antistreptococcus serum polyvalent are administered In addition a residual vaccine[1] is used, three minims containing 15 million *Streptococcus hæmolyticus* and 15 million *Staphylococcus aureus* being given immediately and repeated on the third day after operation.

Successful treatment depends on early excision of the skin wound and of contaminated tissues in the wound, the evacuation of blood-clot, complete hæmostasis, and the accurate approximation of the fractured bone-ends so that no dead-space for a serous collection persists The urgent need of early operative treatment in these conditions cannot be too strongly urged, nor can the importance of complete exploration. It is futile to excise and suture a small wound without investigating the conditions in the fractured area: this is only sealing an infected wound

The treatment of the skin wound is of the utmost importance Where the skin edges can easily be brought together and sutured this will give the patient an excellent start. If easy approximation cannot be secured, and if the skin edges are blanched after suture, then attempts to secure primary suture should be abandoned. A skin wound with blanched edges will surely give way and gape, and a troublesome ulcerated area will thus be formed It is inadvisable to attempt to secure union by undercutting the skin edges, or by means of incisions parallel to the wound. Primary suture of the wound, then, depends mainly on the extent of the original compound-fracture wound Where the wound is small primary suture will usually be possible, but it will be impossible where there is much damage to, or destruction of, the skin, especially in the transverse axis of the limb. The nutrition of the skin should be closely observed. Crushed, parchment-like skin invariably dies and gives rise to chronic ulceration which seriously prolongs convalescence This devitalised skin should, therefore, be excised at the time of operation.

Discretion should be used in the treatment of oth skin injuries in the region of a compound fractu but if there is doubt as to the viability of the sk it should be excised as economically as possible On cannot efficiently carry out the toilet of a compou fracture through a button-hole incision, and afte the wound edges have been pared and overhangin ragged and bruised skin edges have been conserva tively removed, the wound should be enlarged freel in the long axis of the limb. The outward and visib wound is usually deceptive as to the damage of so tissue and periosteum underneath There is usuall fairly extensive injury of muscle and a surprisin degree of stripping of periosteum, which is ofte visibly contaminated with foreign material. Th bruised and torn muscle edges should be carefull excised and the continuity of the muscle restore with a few points of catgut suture The excisio of the injured periosteum does not seem to hav any inhibiting effect on the rate or extent o bone union.

In fractures with displacement there is always a space between the new line of the bone and the sof tissues; this is filled with blood and disappears wit accurate reduction of the fracture, where this i possible The obliteration of this space is importan because of its tendency to drain through the woun with the formation of a sinus, which may at first b aseptic, but where there is a danger of secondar infection Advantage should be taken of the exposur of the bone ends to obliterate this dead-space Th hæmostasis should be meticulous to avoid furthe hæmatoma formation.

The bone ends should be carefully dried and approximated as in the deliberate open reduction o a fracture, after being swabbed with some antiseptic This accurate apposition of the bone ends ensures a "dry" wound, the soft tissues falling naturally ove the line of the bone with no resultant dead space, such as is inevitable if poor alignment or angulation is allowed to persist.

The transverse type of fracture usually dovetails accurately and the stability of the bone is good When the fracture is oblique or comminuted, and where the stability of the limb is not good, one is ofte faced with the necessity of introducing some form of internal fixation material. Teaching and tradition are strongly against such a procedure, but my own observations suggest that its dangers in the case of recent compound fractures subjected to immediate operation have been exaggerated In this series 33 cases have had internal fixation—wire, silkworm gut, and kangaroo tendon having been employed In no case was any sepsis caused by the foreign material Bad alignment ensued in one compound fracture of the tibia, with marked loss of soft tissue and skin on the anterior and medial aspects of the bone. Th was due to removal of the wire too early, the lower fragment sagging posteriorly immediately the wi was removed. Where foreign material is introduced superficially, as in a wired tibia, there is always a tendency for the overlying skin to become ulcerated even after it has healed for some time. The removal of the fixation material in this case is usually a simpl matter, and healing automatically follows

The wound should be made as dry as possible All tiny chips or fragments of bone should be removed and anything in the nature of "bone meal" cleared out Any fragment of bone of considerable size should be retained, for in its original site it may facilitate restoration and maintenance of alignment whe reduction is effected.

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[1] Jenkins, C. E, *Brit med J.* 1922, 1, 596

With regard to the antiseptic treatment of the wound, I have used a 1 per cent mercurochrome solution for swabbing the injured soft tissues and the bone ends There is no special virtue in swilling the wound out with ether—in fact my impression is that ether has a deleterious effect on new bone formation, and that where it has been employed union has been slow Probably in cases treated early no form of wound antiseptic is necessary, but one should certainly give the patient the benefit of the doubt

External fixation has, in this series, been carried out by immobilisation of the limb in plaster of paris Any method of treatment that requires constant adjustment and supervision of apparatus is obviously unsuited for this type of injury, and the one method which does not demand such constant adjustment and supervision is plaster of paris fixation If, as is sometimes the case after reduction, the fixation of the bone fragments seems a little precarious, the incorporation of a suitably padded sterile metal gutter-splint during the application of the plaster will give the required stability A properly applied plaster cast eliminates the necessity for interference with the part, facilitates nursing, and permits the patient to move in comfort and safety Where there has been primary suture of the skin wound the plaster may be intact, but where an extensive open area is present it is advisable to have some form of inspection window cut The drawback to the rigid Winnett Orr technique is that where an extensive granulating area is present the stench becomes intolerable to the patient and those around him, so that it is an advantage to have an inspection window through which the wound can be occasionally inspected, cleansed and dressed While the patient is at rest there is no danger of "window œdema," but this condition is common in the ambulatory patient Where possible patients are allowed to walk early, but this line of treatment is not always possible, especially where there has been extensive damage to the skin and soft parts, necessitating comparatively bulky dressings, and in bilateral cases In the former group it is advisable to allow a period of rest—say 4–5 weeks—for swelling of the limb to subside, for the raw area to heal and the fracture to become "sticky," before applying a new close fitting plaster case and encouraging the patient to begin walking

No doubt many of the methods adopted in this series of cases will arouse criticism, but the results are, I think, sufficiently satisfactory to justify them. In the earlier cases there were some errors in treatment, such as allowing active weight bearing too soon with resultant deformity requiring operative correction, but there have been no cases of gross bone *infection after a compound fracture treated on* these lines

SUMMARY

In compound fractures of the long bones hæmorrhage and shock may be increased by the imperfect application of tourniquets as a first aid measure Shock may be produced by preparing the skin of the part before the patient is anæsthetised

In 173 consecutive cases personally conducted the fracture site was completely explored after conservative excision of the skin and wounded tissues had been carried out by enlarging the wound in the long axis of the limb Open reduction of the fractures was thus facilitated

In 38 cases internal fixation materials—wire silkworm gut and kangaroo tendon—were used without producing sepsis In all cases external fixation was maintained with plaster-of paris

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CLIMATE AS A FACTOR IN EPIDEMIC MENINGITIS IN KORDOFAN

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In the Northern Sudan, where an annual dry season alternates with a wet season, epidemics of meningococcal meningitis invariably start *early in the dry* season and finish at the onset of the rains. It has been popularly supposed that the actual rainfall stops them, and in the past, among other countermeasures, an increased use of watering carts has been adopted in Khartoum epidemics, the presumption no doubt being that infection might be dust-borne Riding and Corkill (1932) showed that on a monthly graph, in a Khartoum epidemic, incidence rose as humidity dropped and dropped as humidity rose The association was graphically exact, and rain was assumed to be the cause

The relationship later seemed to me to be capable of explanation by the appearance in the previously parched country of vernal greenery, particularly young grass, implying the advent of the "anti-infective" vitamin A to the public milk supply Large epidemics occurred in the years 1934, 1935, and 1936 in Kordofan, the Nuba mountains area of which was under my *administration*, and opportunities were presented for testing this hypothesis and collecting data relating climatic factors to such epidemics Figures were plotted fortnightly, meteorological data being taken from the daily observations of the local unit of the department of agriculture in Kadugli They are considered sufficiently representative of the area as a whole.

RAINFALL

The wet *season of* 1934 *closed* with 100 *mm* of rain in the fortnight ending Nov 3 In the fortnight ending Nov 17 the first two cases of a new epidemic were reported, there had already been an *epidemic* in the preceding dry season The epidemic started to drop in the fortnight ending April 6 and closed in the fortnight ending May 18 Rain fell first in the first week of May, hence the falling of rain is shown not to have initiated the closure of the epidemic Similarly, in the following dry season, the climatic accident of a heavy rain shower in February being disregarded, the epidemic was practically terminated before the first rain of the wet season

In 1935, at the end of April, the country was burnt, barren, brown, and dry Light rain fell in the first week of May, by the 7th telegrams had come in from representative parts of the area reporting vernal greenery, and by the 14th stock animals were reported to be grazing on such greenery, now two inches and more tall. Even if an appreciable advent of vitamin A to the milk supply is assumed to have been associated with the earliest possible green grazing it cannot have initiated the closure of the epidemic, for this commenced over a month earlier Clearly, rain *qua* rain *did not close the epidemic*

HUMIDITY

In the 1932 Khartoum epidemic the monthly graph referred to above showed that the *epidemic* started with the humidity at 20 per cent and began to fall as the humidity rose to 37 per cent In the Nuba Mountains in 1934 the epidemic commenced as the humidity fell from 61 to 40 per cent and started to close at 28 per cent, actually finishing as the humidity rose from 40 to 65 per cent In the following season it started as the humidity fell from 27 to 25 per cent (having averaged 60 per cent. for the preceding fortnight), started to close as humidity rose from 28 to 35 per cent, and closed with the humidity at 46 per cent The milder epidemic of *1935–36* was associated with a higher average general humidity throughout the dry season, there being two intra-epidemic minor peaks of humidity and one extremely unusual shower of rain in the middle of the dry season The association is clear and constant; but, since the epidemics begin to close before humidity actually rises, the relationship is not directly causal but incidental, and therefore the causal factor must be sought in something associated with but preceding the rise of humidity at the end of an epidemic. The only phenomenon offering itself in this respect is cloudiness, and, although no records were taken, it was a matter of experience that clouds appeared well before the rise in humidity.

Here it is desirable to quote the observations of Lieut -Colonel G. K Maurice, senior medical inspector, Darfur, on the epidemics in that province in 1935 and 1936 He wrote that, when the disease appeared in the province in April, 1935, the humid south alone was untouched. The epidemic ended latest in the dry northern part of the central district Of the *1936* epidemic he wrote that, although there were no clouds in Darfur when the epidemic ended or for long after, its closure synchronised with the advent of increased humidity, as shown, in the absence of records, by the increased greenness of the trees "Everything points to humidity somehow playing an important part in closing or preventing an epidemic of C S.M. *In 1936* it ended first and abruptly in the humid south."

Here, again, the association with humidity, though unmeasured, is indisputable. A factor or factors associated with both cloudiness and humidity must therefore be sought, and the questions of temperature and sunlight examined.

TEMPERATURE AND SUNLIGHT

The figure shows that extremes either of heat or cold had no apparent effect on opening or closing an epidemic. Such extremes, however, accentuated the rise of the epidemic, and milder temperatures decreased the abruptness of the rise This phenomenon is well shown, apart from other phases of the graph, by the climatic accident in February, *1936*, when there was a fall of 72 mm. of rain in the middle of the dry season and at the height of the epidemic. Humidity rose, maximal and minimal temperatures fell, the pace of the epidemic slowed down, and there was a drop in the fatality-rate. This last, however, was anomalous; for, viewing the graph curves broadly and discounting *fatality-rates* in series of under 20 cases and for the two fortnights ending Jan. 11 (in which it is known that there was a delay in reporting deaths from a remote major focus), it is seen that, as a general proposition, when cases increase abruptly the fatality-rate falls, and when they decrease abruptly the fatality-rate rises This is *not invalidated* by lag due to patients dying, because the average death-time for the epidemic was between 3 and 4 days, and the graph time-unit is a fortnight.

Clouds reduce actinic, especially the ultraviolet, irradiation. Humidity also much reduces the ultraviolet rays. This reduction, it is suggested, is the important climatic factor in the epidemiology.

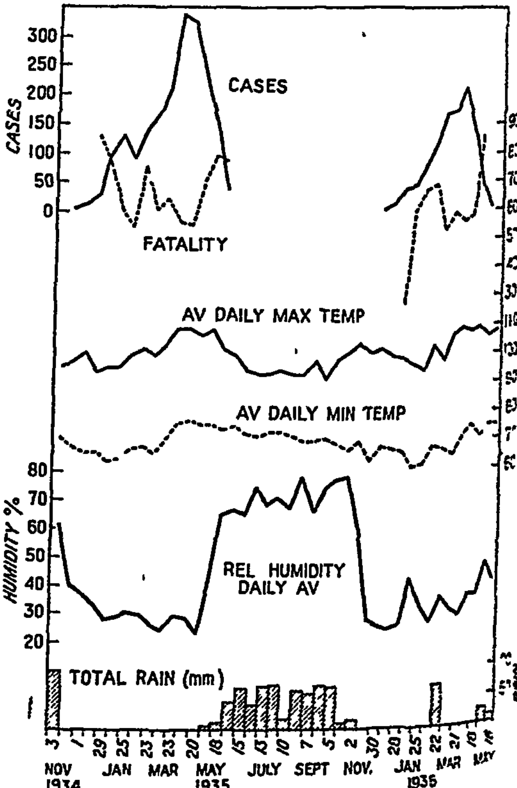
DISCUSSION

I suggest that susceptibility to meningitis is a deficiency condition and is accentuated by exposure to ultraviolet rays In the laboratory Mouriquand, Rollet, and Courbières (*1935*) *found* that in rats on a diet deficient in vitamin A exposure to ultraviolet irradiation caused eye lesions tending to pass into keratomalacia and healing more slowly than superficial eye burns in control rats on normal diet Frank (1937) found that A-deficient rats showed their deficiency sooner if exposed to light than if kept in poorly lighted rooms

Xerophthalmia, keratomalacia, and hemeralopia are fairly common among tribal Sudanese; phrynoderma, a non-specific spastic paraplegia, pellagra and scurvy are diagnosed from time to time, and their diet (with non-relevant exceptions), notably in the Nuba area, is characterised by richness in carbohydrate, low protein content, and an apparent absence of vitamins A, B_2, and C for 4–6 months a year, a state of affairs mainly due to seasonal desiccation.

If my thesis is correct, it should be found that meningitis epidemics in northern latitudes occur when the bright sunlight of spring accentuates the vitamin deficiency which has been experienced in the cold sunless vegetation-destroying winter. Such is precisely the case, and in Scandinavia, it may be noted, spring is also the scurvy season Schiøtz (1935) has indeed pointed out that in Norway the peaks of meningitis and keratomalacia occur together at this time, suggesting activation of a vitamin-A deficiency by ultraviolet rays as a factor common to both conditions.

It has been pointed out above that, apart from anomalies, as the epidemic rises or accentuates its rise, fatality-rate decreases, and that it increases as the epidemic closes or lessens its degree of *increase*, and that such phenomena are related to the suscep



Incidence and fatality-rate of epidemic meningitis relation to climatic factors. (Fatality-rates not va for the period Dec. 14, 1935–Jan. 11, 1936: see text.)

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tibility-accentuating factors of extremes of temperature and ultraviolet rays The explanation may be that, in persons on the verge of being clinically affected, increased intensity of these factors will *precipitate* them into active disease, but as their resistance is stronger than that of persons who would ordinarily get the disease, they *dilute the fatality rate* Conversely, milder temperature and irradiation effects mean that only the persons of very low nutritional status are affected, the fatality-rate being thus concentrated

If this hypothesis is correct, a law emerges to the effect that, when in an epidemic incidence rises but *fatality drops*, a factor is at work increasing susceptibility, and, when incidence decreases but fatality rises, a factor is at work decreasing susceptibility, and a background of malnutrition to the epidemic may be suspected This can apply only if death-time is well within the graph time-unit That this law may be valid was shown by me in 1935 (Corkill 1936) A community given prophylactic vitamin A had fewer cases but a higher death rate than a comparable community not so treated, suggesting that a factor —i e, vitamin A—decreasing susceptibility was involved

CONCLUSIONS

It is concluded that susceptibility to meningococcal meningitis is a deficiency state, and that climate is an important factor in epidemics in that ultraviolet irradiation activates mass susceptibility and causes epidemics, and extremes of temperature accentuate *this susceptibility* *Clouds and humidity* are beneficial in that they reduce ultraviolet radiation, the association of rainfall is incidental

An important point is that in an epidemic, before populations are turned out wholesale from their villages to obviate the very important factor of overcrowding, it should be secured that their temporary shelters give adequate protection *from* bright sunlight and cold winds, otherwise the weighty factor of exposure is thrown into a scale pan already heavily dipped by the factors of malnutrition and, presumably, a heavy carrier rate This has been a matter of experience in the Nuba mountains and, it is understood, in Darfur

SUMMARY

(1) Popular opinion in the Northern Sudan associates epidemics of meningitis with the dry season and their closure with the onset of the rains, but rain is merely an incidental factor

(2) Since humidity and clouds are associated with the closure of epidemics and temperature extremes increase susceptibility to the disease but decrease the fatality rate and sunlight is associated with the disease it is suggested that clouds and humidity close epidemics by decreasing solar irradiation Susceptibility to meningococcal meningitis may be regarded as a deficiency state, being activated by seasonal advent of heavy ultraviolet irradiation Laboratory evidence of activation of deficiency states by ultraviolet irradiation is given and the tribal populations involved are shown necessarily to be deficient in protein and vitamins A B_1 and C Classical deficiency diseases occur among them

(3) A similar argument applied to northern latitudes explains the local epidemiology of epidemic meningitis

(4) A new law relating graph phenomena in an epidemic to a malnutritional background is tentatively formulated

(5) It is concluded that quarantine measures disregarding the factor of exposure may be very harmful

I am indebted to Dr E D Pridie, director of the Sudan Medical Service, for permission to publish, to Lieut-Colonel G K Maurice, formerly senior medical inspector in Darfur, for permission to use his observations on a coincident epidemic in that province; and to Dr F L Wheaton, S M S, for the reference to the observations of Dr Schiøtz.

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EFFECT OF FOLLICULAR HORMONE ON MENOPAUSAL FLUSHES

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M C O G

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ALTHOUGH the efficacy of ovarian follicular hormone in menopausal disorders is generally recognised, much remains to be learnt about the dosage. This paper reports the use of comparatively small doses in 51 cases where the menopause had been induced with radium The indication for treatment was the symptom generally called "flushings" or "hot sweats," and since this is the best defined, as well as the commonest, of all the many menopausal complaints, it was used as an index of therapeutic action

Whatever part other endocrine or nervous influences *may play in causing these flushes, they certainly* follow the withdrawal of the ovarian influence, and administration of ovarian hormone is rational. In judging its effect, however, one must remember that the patients are apt to be in a highly suggestible state Thus in 100 cases at the normal menopause Pratt and Thomas (1937) found that the general condition benefited *as much from lactose* tablets *and injections* of sterile oil as from preparations containing ovarian hormones In the present inquiry I have tried to eliminate the psychological factor by asking the women to take written notes of the number, severity and duration of the "flushes" and by substituting dummy tablets of lactose in every fifth patient treated

In the majority of cases hormone therapy was started 8–12 weeks after radium was used, and, although "flushes" have developed in this interval, it is my experience that as a rule a considerably longer time elapses before the mental changes become apparent

In women over 40 the interval between the radium *treatment and the onset of* "hot flushes" varies considerably, but the average time is probably four to eight weeks In surgical castrates and younger women the onset is much quicker Werner (1935) found an immediate onset in 44 out of 53 castrates, though he also said that some women might have a period of delayed onset varying from six months to six years In all my cases "flushes" had developed to various degrees by the eighth week after radium treatment

DOSAGE AND RESULTS

Most authorities including Kaufmann, have expressed the belief that large doses of hormones are necessary to produce relief in castrates; but Bishop (1938) reports that 0 6 mg. of œstrone daily by mouth controlled the "flushings" of a surgical castrate aged 20.

When the castration is brought about by radium, the cessation of the ovarian secretion is less sudden, and patients of more mature age are probably less affected by the loss of this secretion In this investigation all the patients were over 40, most of them being about 45. Compared with the normal standards, very small doses of hormone have been given—so small, in fact, that noticeable results were hardly to be expected. But satisfactory results were obtained in nearly every case, although few were completely relieved A gradual readjustment of the endocrine balance was aimed at, instead of mere postponement of the severe symptoms by massive doses of hormone. Although injection is usually more efficient the hormone was given by mouth Apart from expense, this is the most practical method for practitioners who deal with large numbers of these patients and find it difficult to give frequent hypodermic injections.

The 51 women were treated over periods varying up to six months In most cases treatment began between the eighth and twelfth weeks after the radium The preparation of follicular hormone used was Gynœstryl (Roussel) of which each tablet contains 0 025 mg. of œstradiol. The largest daily dose given was 8 tablets (0 2 mg of œstradiol).

EFFECTS OF FOLLICULAR HORMONE ON VASOMOTOR FLUSHES AFTER ARTIFICIAL MENOPAUSE

Case	Number of flushes in 24 hours		Severity	Duration	Highest daily dose in tablets
	Before treatment	After œstradiol			
1	3	0	—	—	4
2	About 24	8	Less	Shorter	8
3	4	2	Less	Same	6
4	7	2	Less	Shorter	6
5	3	0	—	—	4
6	14	8	Less	Shorter	8
7	4	1	Less	Same	6
8	4	3 a week	Same	Same	6
9	6	0	—	—	6
10	2	0	—	—	6
11	8	8	Less	Shorter	8
12	7	5	Less	Shorter	8
13	4	3	Less	Shorter	4
14	4	2	Same	Same	6
15	3	1 a week	—	—	6
16	15	4	Less	Shorter	6
17	8	3*	Less	Same	6
18	6	3	Less	Shorter	8
19	8	3	Less	Same	6
20	4	1	Less	Shorter	4
21	4	0	—	—	6
22	3	0	—	—	4
23	4	1 a week	Less	Same	4
24	10	4	Less	Shorter	6
25	1	1	Same	Same	6
26	2	0	—	—	4
27	3	1*	—	—	8
28	12	12	Less	Shorter	8
29	6	2	Less	Shorter	6
30	5	0	—	—	6
31	2	1*	—	—	6
32	2	2	Less	Shorter	8
33	4	0	—	—	6
34	4	2	Less	Shorter	6
35	6	2	Less	Same	6
36	5	3	Less	Shorter	4
37	5	4	Less	Shorter	4
38	About 30	12	Less	Shorter	8
39	7	1*	Less	Shorter	6
40	6	4	Same	Same	8
41	10	3	Less	Shorter	8
42	5	1	Less	Shorter	4
43	12	4	Less	Same	8
44	3	0	—	—	4
45	12	4	Less	Same	6
46	2	0	—	—	4
47	5	2	Less	Same	4
48	4	4	Less	Same	8
49	8	4	Less	Shorter	6
50	4	1	Same	Same	6
51	8	4	Less	Shorter	8

* Sometimes nil

The procedure, in an average case, was as follows. The patient was given 4 tablets daily, and the dose was increased to 6 or 8 tablets, according to the result at the end of fourteen days. After four weeks at the increased dose, if the "flushes" were sufficiently controlled to cause the patient no discomfort, the tablets were reduced to 6 or 4, and finally to 2 Any improvement noted was as a rule maintained and it proved unnecessary to revert to a larger dose. The accompanying table shows the number of "flushes" in twenty-four hours at the beginning of treatment and the lowest number this could be reduced to with the above dosage of hormone The effect on the severity and duration of the "flushes," as noted by the patient, is also recorded

One in every five cases treated was given dummy tablets of lactose, presented in a similar packing In these patients, although some said that the severity and duration of the "flushes" were lessened, there was no reduction of the number in twenty-four hours.

DISCUSSION

The results indicate that œstradiol reduces the number, severity and duration of "hot flushes" after a radium menopause. In 11 cases, as shown by the table, a complete cure resulted, the average period of treatment being about four weeks; but these were mostly patients with a small number of "flushes" daily, before treatment started In only 5 cases did treatment fail to reduce the number of "flushes," and in 4 of these their severity lessened. In assessing results one had to rely on the patients' statements, and the emotional instability of women at the menopause reduces the value of such evidence. But the use of dummy tablets and the written notes help to eliminate this source of error.

Since administration of follicular hormone over long periods is expensive, a knowledge of the efficacy of small doses by mouth may be of use to practitioners Throughout this investigation, therefore, the doses were kept extremely low, although no doubt they could in many cases have been increased with advantage, and complementary injections might have given even better results. The cost averaged 3s 6d. per week per patient

SUMMARY

(1) Follicular hormone (œstradiol) was administered to 51 women suffering from "hot flushes" after an artificial menopause induced by radium.

(2) The hormone was given only by mouth and the dosage purposely kept very low so as to estimate the effect of the limited quantities likely to be available for such cases in general practice.

(3) In nearly all cases the number and severity of the "flushes" were reduced, and most of the less severe cases were cured.

(4) After the tablets had been gradually withdrawn there was seldom any recurrence of symptoms within the next six months.

My thanks are due to the honorary staff of the Hospital for Women, Soho, for permission to treat cases from their outpatient department in the endocrine clinic, and to Dr. F. L McLaughlin of Roussel Laboratories Ltd. for liberal supplies of gynœstryl.

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ACQUIRED TOLERANCE OF PNEUMOCOCCUS TO M. & B 693

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That pneumococci can rapidly acquire tolerance or fastness to M & B 693 in laboratory animals has been shown by Maclean, Rogers, and Fleming (1939) No direct evidence, however, has been recorded that organisms which have invaded the human body have acquired tolerance to the sulphanilamide group of drugs administered therapeutically, although Cokkinis and McElligott (1938), in their report of the treatment of gonorrhœa with sulphanilamide, say that, if cases are treated early before immunity can develop or with initially insufficient doses, relapses, if they take place, are very resistant to further treatment with sulphanilamide The experiments recorded in this article show that, in a case of pneumocóccal meningitis, the pneumococcus isolated post mortem, after intensive treatment of the patient with M & B 693, was much more resistant to the drug than was the pneumococcus isolated early in the infection

CULTURES AND EXPERIMENTS

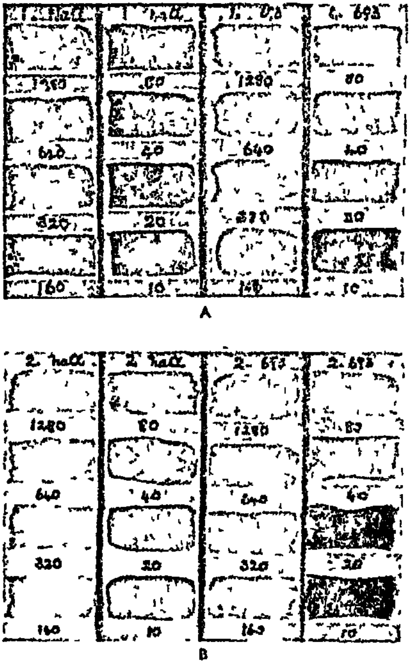
The cultures used were sent by Dr T C Backhouse, of the public health laboratory, Rabaul, New Guinea, to Prof A Fleming They were obtained from a fulminating case of pneumococcal meningitis in a native One culture was isolated during the first twenty four hours of treatment with M & B 693, the other was obtained post mortem after three more days of intensive treatment The clinical details, kindly supplied by Dr Backhouse, are shown in table I

TABLE I—CLINICAL DETAILS OF THE CASE OF PNEUMOCOCCAL MENINGITIS FROM WHICH BLOOD CULTURES WERE OBTAINED

Date in Feb 1939	Clinical history	Condition of C S F	Blood culture	Dosage of M & B 693 (g)	Concentration of M & B 693 in— C S F	Blood
					Mg per 100 c.cm	
22nd	Admitted with pains in chest and stiff neck	—	Not done	2		Not done
23rd	Well marked meningeal signs Patient unconscious Temp 102° F	Opalescent Pressure + + Numerous polymorphs Culture + + *	Heavy growth	10·5	None detected	Not done
24th	No great change Temp 99·8° F	Opalescent Pressure + Culture + +	Heavy growth	16	6	5·6
25th	Slight improvement early, followed by fits	Clearer Culture +	Negative		32	22
26th	Fits continued until death 3 A M	Very turbid Culture + †	Not done		33	Not done
		Total		28·5		

* Strain 1 derived from this
† Strain 2 " "

Dr Backhouse gave M & B 693 partly intramuscularly and partly by nasal catheter Proom's method of estimating the drug was used, and Dr Backhouse remarked that the concentration of M & B 693 seemed fantastically high, and he attributed that to the fading of his standards The cultures took three weeks in transit but grew profusely when they arrived in England, and each showed the type specific capsular swelling with serum type I The sensitivity of these two strains was tested in vitro by the method described by Maclean, Rogers and Fleming (1939) serial dilutions of pneumococcus culture were implanted into (1) equal volumes of M & B 693 1/10,000 and human defibrinated blood, and (2) equal volumes of normal saline and defibrinated blood; these mixtures were then placed in slide cells and incubated for twenty four hours These experiments were repeated many times with results such as are illustrated in the accompanying figure, which shows that strain 1 is much more sensitive to M & B 693 than is strain 2 Table II is a typical protocol of such an experiment and shows that the culture of pneumococcus derived from the patient just after the start of treatment was sensitive to 1/20,000 M & B 693—although not nearly as sensitive



Sensitivity to M & B 693 of strains of pneumococcus from a fatal case of pneumococcal meningitis (A) strain 1 from blood-culture made soon after start of treatment with M & B 693 showing sensitivity to the drug (compare especially 1/80 dilutions), (B) strain 2 from blood-culture made post mortem showing tolerance to the drug The numerals refer to dilutions of a twenty four hours broth culture as many pneumococci have been shown to be by Maclean, Rogers, and Fleming (1939)—but the culture taken after treatment and death was insensitive to this concentration of the drug The number of pneumococci in each culture was practically the same.

TABLE II—SENSITIVITY OF TWO STRAINS OF PNEUMOCOCCUS TO M. & B 693

Culture 1			Culture 2		
Implant	Survivors in saline	Survivors in M. & B 693	Implant	Survivors in saline	Survivors in M & B 693
430	6	0	456	0	0
860	7	0	912	5	5
1760	11	0	1824	5	6
3440	44	10 minute	3648	12	36
6880	268	17 small	7296	31	33
13,700	∞	228 „	15,592	102	238

The growth of strain 2 showed no signs of "roughness," but, because McIntosh and Whitby (1939) have pointed out a correlation between roughness and tolerance to M. & B 693, the virulence of the two strains was compared Mice were injected intraperitoneally with increasing doses of pneumococci in saline The results are given in table III, which shows that, although neither strain was very virulent to mice, their virulence was approximately equal.

SUMMARY

In a fatal case of pneumococcal meningitis treated with M. & B. 693 the culture of pneumococcus obtained shortly after the start of treatment was sensitive to M & B. 693, whereas the culture obtained post mortem was insensitive. No great difference in virulence between the two strains was found, and the insensitive strain showed no indication of roughness and gave the Neufeld reaction with the appropriate type serum.

Although the organism first isolated was sensitive to M & B 693 and formidable concentrations of that drug were present in the body, a cure was not effected. It seems likely that the immunity of the patient was insufficient to deal with the pneumococci even when they had been exposed to a concentration of M. & B. 693 which originally affected them, and that after some three days' exposure to the drug the pneumococci had acquired a fastness to the chemical with the result that it no longer had any effect. If this is so, it emphasises the desirability of increasing the immunity at the same time that M & B 693 is administered, so that if possible the infecting cocci can be destroyed before they have had time to acquire a tolerance to the drug.

TABLE III—COMPARISON OF VIRULENCE OF TWO STRAINS OF PNEUMOCOCCI

Culture 1		Culture 2	
Infecting dose	Result	Infecting dose	Result
2,240,000	Death in 48 hours	5,600,000	Death in 36 hours
224,000	Death in 54 hours	560,000	Death in 60 hours
22,400	Survived	56,000	Death in 84 hours
2240	Survived	5600	Survived

My thanks are due to Dr. Backhouse, who provided the clinical details and cultures, and to Prof Fleming for his generous advice and criticism.

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Clinical and Laboratory Notes

AGRANULOCYTOSIS FOLLOWING ADMINISTRATION OF M. & B. 693

BY M. E SUTHERLAND, M B Lond, D.C H.
RESIDENT MEDICAL OFFICER AT QUEEN CHARLOTTE'S MATERNITY HOSPITAL ISOLATION BLOCK, LONDON

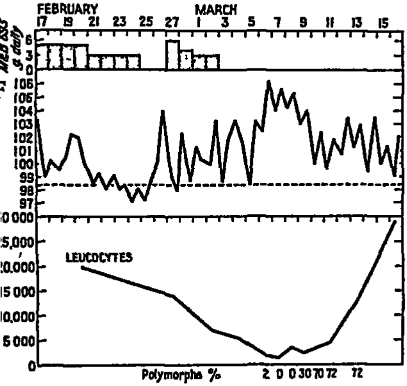
M & B. 693 is being tested in Queen Charlotte's Hospital Isolation Block on behalf of the Therapeutic Trials Committee of the Medical Research Council. A full report will be published later, but in the meantime it seems advisable to call attention to the fact that agranulocytosis may occasionally arise in patients treated with the drug, just as it may with sulphanilamide. One case has already been reported from this hospital by Johnston (1938), and a second is described here.

CASE-RECORD

The patient was a primipara, aged 37, who developed fever twenty-four hours after a manual removal of the placenta and was admitted on the second day of the puerperium as a typical case of a heavy local infection with hæmolytic streptococci The blood culture was sterile Her main complaint was severe headache. During her first eight days in hospital she was given 32 g. of M. & B. 693 by mouth, the drug being stopped when her temperature had been normal for forty-eight hours. Twenty-four hours later her temperature rose sharply to 104° F and M. & B. 693 was recommenced. When the patient had had 40 g. in all the leucocyte-count was 14,700 Three days later, when 52 g. had been given, it was 7000 In view of this sudden fall the drug was stopped immediately, but in spite of giving Pentnucleotide and Campolon the count fell until it reached 1500 with no polymorphs. A transfusion of two pints of defibrinated blood was then given by the drip method. Two days later a leucocytosis was provoked in another donor by the intramuscular injection of 2 c.cm. veterinary nuclein; a pint of blood was then taken, defibrinated, and given by the drip method. On this day the patient's white-cell count showed a rise and a few polymorphs appeared During the period of agranulocytosis the patient's general condition became grave with high fever and pulse-rate Three blood-cultures at this time gave a growth of *Streptococcus hæmolyticus* group A, on one occasion no less than 5000 colonies growing from 1 c.cm Two days after the second transfusion the white-cell count reached 4700 with 72 per cent polymorphs Thereafter it rose steadily until the patient developed a leucocytosis of 29,000 The blood-culture became negative but localised streptococcal abscesses appeared on her back These were opened and have now recovered. The patient never had tonsillitis or hæmolytic streptococci in the throat.

A striking feature of this case was the severe headache of which the patient complained on admission and which persisted until her recovery from the agranulocytosis. A similar symptom had been noted by Johnston Another point was the slowness of response to the drug It was six days before the temperature came down and remained normal (see figure), whereas two or three days is the usual time

So far two other cases of agranulocytosis following



treatment with M & B 693 have been reported in this country and one in America Melton and Beck (1939) mention another case All the reported cases had had large doses before the condition was discovered and the drug stopped Thus Coxon and Forbes (1938) gave 54 g in seventeen days when treating a case of typhoid, Barnett and his colleagues (1939) gave 80 0 g in seventeen days, Johnston (1938) used 54 g in eleven days, and my case received 52 g in twelve and a half days

It seems that quantities over 50 g may be dangerous to patients who are already suffering from a disease which causes some destruction of blood-corpuscles Lloyd, Erskine and Johnson (1938) report that patients treated for gonorrhœa have been given quantities up to 50–52 g without obvious ill effects, but they have noted a slight but definite depression of the white count with polymorphonuclear leucopenia and lymphocytosis in a small proportion of cases Tzanck et al (1939) report a fatal case of agranulocytosis in a patient who showed an intolerance to other drugs and who had only been given moderate doses of M & B 693

CONCLUSIONS

Agranulocytosis may arise after or during treatment with M & B 693 The white cell count falls for two to three days after the drug has been discontinued

A case of puerperal streptococcal infection showed an atypical response to the drug similar to that seen in cases of agranulocytosis during sulphanilamide therapy

Though agranulocytosis may be suspected as the cause of a sudden deterioration in a patient's condition during treatment, it cannot be definitely diagnosed without a white cell count Frequent blood examinations should therefore be made on all cases where M & B 693 is continued for more than a week and large doses are given

I wish to express my thanks to Dr Leonard Colebrook for his advice and assistance in preparing this paper, to Dr I D Hoare for doing the blood-counts, and to the honorary staff of Queen Charlotte's Maternity Hospital for permission to report this case

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AN AID TO PROSTHETIC RESTORATIONS OF THE MAXILLA AFTER EXCISION

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DENTAL REGISTRAR TO THE MIDDLESEX HOSPITAL

When the maxilla is partially or completely removed its restoration is often difficult, and similar difficulties may arise as the result of a palatal antrostomy The collaboration of the dental surgeon in these cases is often of great value The appliances that he may construct are of two classes—those inserted shortly after the operation, and those inserted at a much later date when healing is complete

The appliances for immediate use are solely for the purpose of covering the communication that has been established with the oral cavity by the partial removal of the palate, these, worn only at mealtimes, enable the patients to eat with less discomfort, and are quite easy to make The appliances of the second class present more difficulty in that they are required not only to assist eating but to replace the lost tissue and improve the appearance of the patient If the case is one in which the lost tissue is solely palatal an appliance can easily be devised to make good this defect, but if there is also loss of bone of the outer and infra orbital wall of the antrum, a more complicated problem arises The restoration must not only cover the palate but must also support the cheek and eye from which the natural support has been removed If the palatal opening allows the insertion of an appliance large enough to support these structures the restoration is comparatively simple There are cases, however, in which the opening is too small, and since there is an obvious objection to further

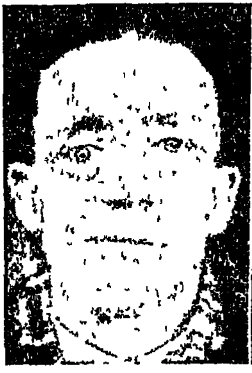

Fig 1—Without support, showing dropping of right eye

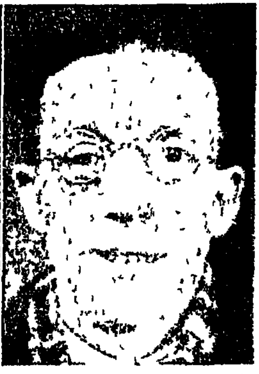

Fig 2—With support showing position of eye corrected

operative measures at this stage the solution must be conservative Some time ago a case of this type came under my care.

On Sept. 14, 1937, Mr Lawrence Abel removed the right maxilla for a giant-cell tumour, the diagnosis having been confirmed by pathological examination. The patient made an uneventful recovery On March 1, 1938, there was a further operation to increase the size of the aperture into the mouth, in the hope that it would be possible to insert an appliance to push up the eye, which had dropped down The opening was made much larger, but it was found impossible to insert an appliance by this route. I therefore solved the problem in the following way The palatal opening was first covered with a vulcanite obturator which was replaced after a few months by dentures, the patient being edentulous except for one upper left incisor The mouth could now be regarded as satisfactory, and the collapse of the cheek had been improved as far as possible The double vision had yet to be corrected, and this was definitely urgent The patient had never required glasses, but I thought that normal vision might be restored by some support to the eye, and this support could most easily be attached to the framework of spectacles Experiments on these lines at the Royal Dental Hospital were entirely successful, and I decided to transfer the patient to the Middlesex Hospital for the advice of Mr. Maurice Whiting, who was of the opinion that this support should have no harmful effect on the eye Messrs. Curry and Paxton fitted the patient with plain glasses with an inconspicuous flesh-coloured support attached. The support was made of cellulose plastic and moulded to fit the concavity below the eye; it was then attached to the lower rim of the spectacle frame The patient has now had these glasses for over six months; he has experienced no discomfort and the double vision is completely eliminated during the time that he wears them. This he does, however, only when he feels they are most needed, for it was feared that a long continuous pressure might have some harmful effect on the eye. Fig. 1 shows the eye without the support and it can be seen that it drops considerably Fig. 2 shows the position of the eye well corrected by the glasses

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

At a meeting of this section held on May 17 Mr. C. H. S. **Frankau**, the president, read a paper on

Surgery in Old Age

Age, he said, is not merely a question of years but depends on degenerative processes associated with a diminished blood-supply. The saying that a man is as old as his arteries would be more accurate if it embraced the condition of the heart muscle The influence of senile changes on prognosis and treatment could be considered under various headings.

Injury to the soft parts may be disproportionately serious in the aged. Severe bruises must therefore be treated with great caution: all pressure is to be avoided and after 24–48 hours, when capillary oozing has ceased, an electric pad applied intermittently is often of value; but fierce heat or cold—for example, an icebag—may precipitate skin gangrene Open wounds are more liable to infection and healing is slow.

Fractures.—In the speaker's experience it is not true to say that fractures in old people unite but poorly or not at all—the exception being intracapsular fracture of the neck of the femur. Most cases of Colles' fracture will with careful reduction and immobilisation give a good and useful joint. In fractures of the long bones union is usually delayed but is eventually complete: one of his patients celebrated his ninetieth birthday with a Steinmann pin through the os calcis and a comminuted fracture of the upper third of the tibia, which united firmly in ten weeks A fractured patella is often considered unsuitable for treatment in old people, but "why condemn a man of, say, 70 to the life of a cripple when removal of his patella will give him, as a result of a speedy and safe operation, a useful limb?" He had seen good results during the late war from removal of the patella shattered by gunshot. However another side of the picture was the unpredictable, and as far as he knew unexplained, phenomenon of "disunion" occurring some weeks after apparent healing of a fracture In plaster treatment pressure sores over bony points (for example the styloid process in treatment of Colles' fracture) must be carefully avoided by adequate padding.

Massage, apart from being valueless, Mr. Frankau regards as dangerous to old people, owing to the liability to dermatitis which may lead to subcutaneous venous thrombosis

Acute abdominal conditions—He recognised two definite facts about acute appendicitis in old age At one stage it may resemble intestinal *obstruction* of slow onset with an "acute indigestion" pain commonly referable to the epigastrium, rarely to the right iliac fossa, and a persistent pyrexia; physical signs are indefinite, the abdomen is distended, sometimes there is visible peristalsis and tenderness is general, often being greatest in the hypogastric and umbilical regions. At operation there is little peritoneal exudate, the intestines are sticky and red, and the infected appendix is rarely shut off by adhesions; these patients despite their age and the long duration of symptoms tolerate operation well. The other type of case presents "an acute attack of indigestion" followed by indefinite symptoms, inability to take food, constipation or diarrhœa, and a persistent slight pyrexia; examination, indefinite at first, later reveals a hard tender *mass*—an appendix abscess—in the right iliac fossa The abscess formation is remarkably slow As in all cases of appendix abscess, operation should be delayed *until* complete localisation is certain, and if the appendix is not found at once it should not be sought.

Surgery is not advisable for short attacks of biliary colic provided they are controllable by morphine and atropine, and provided the gall-bladder is not persistently distended; but if the attacks increase in frequency or severity, or if the gall-bladder becomes distended, operation is inevitable. Drainage of the gall-bladder is then preferable to removal except when it is literally "hanging by a pedicle" From one patient, a woman of 83, he six years ago removed a stone the size of a small lemon, draining the gall-bladder which was full of pus; the patient has remained well and survived the removal of a gangrenous appendix at 88 In old people the liver may drop and on two occasions (five years ago in one patient, now aged 87 and well) what appeared to be an appendix abscess proved to be an empyema of the gall-bladder low down in the right iliac fossa

Carcinoma in old people usually progresses slowly with less tendency to disseminate A small scirrhous carcinoma of the breast in a patient aged 75 who refused treatment had, when she died of bronchitis at the age of 81, grown to the size of a hazel nut (double the original size) and was about to ulcerate through the skin , another patient, aged 76, after a lateral anastomosis for carcinoma of the splenic flexure which was producing intestinal obstruction, lived over six years with the growth untouched and without further symptoms referable to the abdomen A woman of 87 with complete obstruction was treated by a cæcostomy, which subsequently closed, and an anastomosis of the lower part of the pelvic colon, and he went to a cocktail party given by her on her ninetieth birthday For carcinoma of the breast in really old people local removal of the gland is generally adequate, and extensive radical operations are to be avoided , in the abdomen exclusion of a carcinoma of the colon by anastomosis is safer than excision, and for pyloric stenosis due to cancer of the stomach gastro enterostomy is the most that should be done, gastrectomy being too severe

Urinary tract conditions —When cystitis and pyelitis are associated with obstruction, the latter must obviously be dealt with first , mandelic acid must be used cautiously if casts in the urine suggest renal degeneration The risk of nausea and vomiting from sulphonamide drugs may be obviated by giving small doses of dilute hydrochloric acid after the drug

Hernia —A change from a smaller to a larger-sized pad, by distributing the pressure over a greater area often allows an ill fitting truss to be worn with comfort Elastic bands are more *comfortable* than steel springs, although if the latter are essential the Salmon Ody type is preferable , a double truss should be fitted even though the hernia is unilateral Some patients require a change of truss every two or three months In an aged person a local mild operation is justifiable for an inguinal hernia which cannot be controlled by a truss, in order to reduce the size of the opening and allow a light appliance to be worn subsequently Umbilical hernia in old people should be left alone

Management of an operation —Operation, unless of a life saving nature, should be ruled out in patients with impaired renal efficiency, chronic bronchitis, or a flabby heart muscle Rest in bed for some days previously is desirable, when fluid and glucose should be given up to the limit of tolerance (the intravenous route is best avoided owing to the risk of pulmonary œdema) Old people are not very tolerant of glucose, and glycosuria easily develops, so that a small dose of insulin is often advisable Iodine may irritate and alcohol is a safer skin preparation The ideal anæsthetic, in Mr Frankau's opinion, is Avertin, with gas and oxygen, which appears to be safe at any age and gives adequate relaxation , if necessary a small amount of chloroform is probably a safer addition than ether The uses of Evipan are limited, and spinal anæsthesia is unsatisfactory in old people Postoperative basal collapse may be inhibited by inhalation of CO_2 and oxygen at regular intervals for 24–48 hours after operation , this applies especially to upper abdominal operations, but it is also valuable for fracture cases suddenly put to bed, and should be used much more often

Despite every precaution however the patient often fades away after apparent success

Although discussion of a presidential address was not strictly in order, Mr Frankau asked for points of disagreement

Mr ZACHARY COPE said he thought a carcinoma of the stomach should be removed whatever the age of the patient He had operated successfully on one patient aged 78 who died 2½ years later, and two other patients on whom he had operated were aged 70 and 74 —Mr G GORDON-TAYLOR, in moving a vote of thanks, said he believed a successful operation for strangulated femoral hernia had been reported in the United States at the age of 107 —Sir ALFRED WEBB JOHNSON, seconding, maintained that a large open growth or ulcer on the body of the stomach should be removed if there is the slightest possible chance of success

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of pathology held on May 5, with Dr R A Q O'MEARA, the president, in the chair, Prof JOHN MCGRATH opened a discussion on

Hæmoglobin Estimations

and the necessity for the adoption of a common standard The estimation of hæmoglobin in the blood, he said, is often more important in diagnosis and prognosis, though less accurate, than the enumeration of the erythrocytes in combination with the latter (the proportion being expressed as the colour index) the estimation is essential for the proper study of any form of anæmia There are many ways *of estimating hæmoglobin , these comprise methods* of determining the oxygen combining power of the blood or the iron in the blood, and various colorimetric methods The latter are almost invariably used clinically and in the usual hospital laboratory, a blood, coloured liquid or glass standard being compared with a diluted solution of the blood to be examined , the hæmoglobin being usually transformed into one of its derivatives, commonly acid hæmatin The amount or weight of hæmoglobin cannot be determined directly, and consequently where the *utmost precision* is *necessary the oxygen* combining power of the blood or its iron content is determined The most important function and property of hæmoglobin is its ability to combine with oxygen in the proportion of one molecule of oxygen to each atom of iron, and probably (as stated by Van Slyke) the best method of expressing the hæmoglobin content would be in terms of oxygen combining power The hæmoglobin per 100 c cm of blood may be calculated on the assumption that 1 g. hæmoglobin has an oxygen capacity of 1 34 c cm , this basis has proved difficult to determine exactly, but it is reasonably accurate and is generally accepted in practice This method is, however, as yet unsuitable for clinical use The iron content of the blood may be determined by one of several methods notably those of Kennedy, Wong and Ostergaard The value of the hæmoglobin content may then be found, since hæmoglobin contains 0 0335 per cent of iron The latter figure, is, however, susceptible to the same degree of error as the oxygen-combining power.

The accuracy of these laboratory methods is amply sufficient to enable them to be used in the calibration of the colorimetric instruments which are used clinically The simpler of these clinical methods have wide margins of error—up to ± 20 per cent —but the better methods carefully used should have an accuracy of about ± 5 per cent.

DIFFERING NORMAL STANDARDS

Prof. McGrath pointed out that the various forms of apparatus used clinically employ different normal standards The result is usually reported as a percentage of the normal, and the clinician has become accustomed to seeing and understanding this form of report Furthermore, such a form is essential for the computation of the colour-index The normal amount of hæmoglobin was formerly given as being about 14 g per 100 c cm blood (Haldane), but this has been shown by various workers to be too low. It has been shown that in the adult, considered as being normal, the hæmoglobin-content varies from about 13 g to 17 5 g, and even more extreme figures have sometimes been recorded Following on these findings various instruments have been widely sold which are calibrated according to different standards The normal of 100 per cent varies in these instruments from 13 8 g to about 17 g Hb per 100 c cm blood. Usually reports are furnished giving the percentage of hæmoglobin based on these calibrations, and the actual amount of hæmoglobin corresponding to 100 per cent is not stated. Published papers often contain figures which are of uncertain significance for the same reason . there is no foundation for the belief that the hæmoglobin figures in English publications are invariably based on the Haldane standard. It is not unusual, in Dublin and elsewhere, to see reports on the same blood by different pathologists which are not comparable because different standards are used to express the result To give an example: let us assume a person with a blood of 2,500,000 red cells per c mm. and a hæmoglobin content of 8 5 g. per 100 c cm blood The pathologist with a hæmoglobin standard of 14 g. per 100 c cm blood will express this as Hb 61 per cent , colour-index 1 2; while his colleague with a standard of 17 g per 100 c cm blood will express it as Hb 50 per cent , colour-index 1·0 Various workers, including Haden and Osgood, have suggested that, in order to eliminate this confusion, the amount of hæmoglobin should be reported in grammes per 100 c cm blood This method would be quite excellent and reasonable, but clinicians have become accustomed to the expression of hæmoglobin in percentages, and again the colour-index should certainly be given in every case It is, therefore, desirable that a standard normal value for the hæmoglobin content should be adopted and utilised in all reports, at any rate in this country

METHODS OF DETERMINING THE STANDARD

One of two methods might be used to determine the standard. (*a*) The standard might be arbitrarily determined by a committee from the figures already published. The wide variation in the values found in "normal" adults must be regarded in the light of the number of erythrocytes present. The standard normal hæmoglobin should be taken as being the amount present in the blood of a normal adult with 5,000,000 red cells per c mm On this basis the variations of hæmoglobin in normal people becomes easier to understand. We see, for example, that if the normal adult with 5,000,000 red cells per c mm had (say) 14 g Hb per 100 c cm blood, then a normal ad[illegible]le with 4,500,000 red cells with exactly similar cellular hæmoglobin content would have 12 6 g. Hb per 100 c cm. blood, and a man with 6,000,000 red cells would have 16·8 g Hb per 100 c.cm. The standard normal adopted should, however, bear a reasonably close relation to the actual normal, if a high colour-index is to have its proper significance There is good reason for believing that the red corpuscles are normally saturated with hæmoglobin: a colour-index above unity, therefore, should indicate increased average size of the cells, rather than supersaturation with hæmoglobin, the increased average "size" normally indicating increased average diameter (*b*) The normal standard to be adopted might be determined as a result of investigation. Though such investigations have been made elsewhere, the correlation between height, weight, age, and the hæmoglobin and cellular content of the blood in normal adults in this country has never been critically investigated, and might be a suitable subject for research

The adoption of a common normal standard for hæmoglobin would not make it necessary to discard the apparatus now in use: these could be calibrated and the results transposed to standard by the use of a factor

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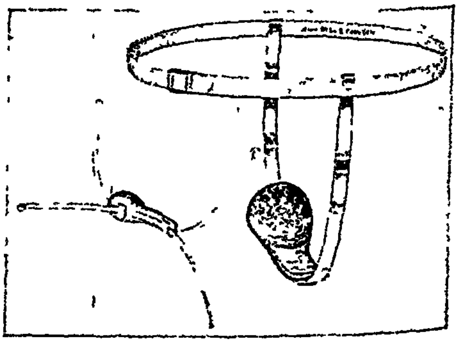
NEW INVENTIONS

APPLIANCE FOR CONTROLLING PROLAPSE OF THE RECTUM

For an advanced and inoperable case of prolapse of the rectum the appliance illustrated here has distinct advantages over the usual non-rigid sling and pad and was found to be very satisfactory in practice

The appliance consists of a narrow elastic or webbing belt, a strip of thin, flat, spring steel which is hooked at either end to take the belt, and a cone-shaped pad made up of layers of Sorbo rubber on a backing of firm leather



Two leather slings attach the pad to the spring and allow of sliding adjustment backwards and forwards. The rigidity and flatness of the spring holds the pad in position more firmly than does a non-rigid appliance and there is little tendency for the prolapse to escape past the side of the pad. In addition, the shaping of the steel spring holds it clear of the body and avoids the "cutting in" which is a source of discomfort when a non-rigid sling is tightly braced.

The appliance was made for me by Messrs John Bell and Croyden, Wigmore Street, W.1.

G. F Grant Batchelor, F.R.C.S.
Surgeon to West London Hospital

REVIEWS AND NOTICES OF BOOKS

The Practice of Medicine

(2nd ed) By JONATHAN CAMPBELL MEAKINS, M D, LL D, professor of medicine and director of the department of medicine, McGill University, physician in-chief, Royal Victoria Hospital, Montreal London Henry Kimpton 1938. Pp 1413 50*s*

Prof Meakins is a modern physiologist physician As physiologist he believes that there is "a true basis for conclusions in all abnormal processes in living man, if we know enough properly to evaluate them." As physician, he aims at being "a combination of a confessor, a judge, a counsellor and, above all, a friend" In his presentation of medicine, pathology is no longer just the pathology of the post mortem table, it is the pathology of the living, which means the disturbance of physiological processes produced y disease, traced through the days or months or ears that disease may last He is conspicuously nterested in the mechanism and significance of signs nd symptoms That is the keynote of this text-ook, whose second edition, duly brought up to date, we are glad to welcome, 500 illustrations, chosen o amplify descriptions of less common rather than f everyday conditions, are among its valuable eatures

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odine and the Incidence of Goiter

By J F McCLENDON, professor of physiological chemistry, University of Minnesota London Humphrey Milford, Oxford University Press 1939 Pp 126 22*s* 6*d*

Schilddruse, Jod und Kropf Klinische und experimentelle Untersuchungen

By M SAEGESSER, Bern. Basel Benno Schwabe and Co 1939 Pp 103 Swiss Frs 10

THESE two books present an interesting contrast n methods of attacking the same problem Although the validity of the hypothesis relating iodine deficiency to the occurrence of endemic goitre must be regarded as settled in broad outline beyond all reasonable doubt, the precise rôle of iodine in other forms of thyroid disease is by no means so clear, and even in relation to simple goitre there still remain points to be explained

The book of Prof McClendon will be universally welcomed, it carries with it the authority of a worker whose own contribution to the goitre problem is recognised all over the world, and it provides for the first time a concise but comprehensive summary of the great mass of analytical work which alone has provided a secure foundation for the accepted theory of the ætiology of goitre The cumulative evidence afforded by this summary can leave no doubt in the mind of the most sceptical reader as to the primary ætiological importance of environmental iodine It has not been sufficiently realised that the accurate determination of small amounts of iodine is a very difficult chemical operation, and many studies have been undertaken by workers little qualified for experiments of this nature In a compilation as comprehensive as this the author is compelled to include figures that are open to grave doubt, such doubt appears to arise especially in connexion with the analysis of animal organs and body fluids, and the sections dealing with these subjects might well have been prefaced with the illuminating results of the analysis of the same sample of blood in different laboratories which is referred to in the section on the determination of iodine The discriminating reader will, however, be able to sift the wheat from the chaff, and will find this not only a valuable work of reference but instructive and suggestive reading

Dr Saegesser's monograph is mainly an account of his own researches into the relation of iodine not only to simple goitre and cretinism but to conditions of hyperthyroidism The problems have been attacked by the experimental method, the main subject of study being the variations in iodine metabolism which are associated with pathological states of the thyroid Particularly interesting are the results of iodine feeding experiments which lead the author to conclude that the fundamental biochemical lesion both in hypo and hyper thyroidism is a disturbance in the total metabolism of iodine in the body—total metabolism including rate of excretion, mobilisation of iodine from extra thyroidal tissues and equilibrium between iodine and active thyroid secretion Dr Saegesser's arguments are not always easy to follow, but his experimental results are suggestive and are worthy of careful consideration

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Dental Surgery and Pathology

(7th ed) By J F COLYER, K B E, LL D, F R C S, L D S, consulting dental surgeon to Charing Cross Hospital and to the Royal Dental Hospital, London, and EVELYN SPRAWSON, M C D Sc, M R C S, L D S, dental surgeon and lecturer in dental surgery and pathology to the London Hospital London Longmans, Green and Co 1938 Pp 1067 35*s*

THIS book has been the mainstay of generations of students and has many merits The teaching is simple, clear and forcible, the selection of matter is on the whole good and the illustrations are excellent The chapters on dental caries still strike us as being disappointing and inadequate The reference to the researches of Lady Mellanby is far too brief, and the Birmingham experiments on prolonged feeding of groups of children on various diets are not mentioned Bunting's work only gets a few lines We appreciate the difficulty of preserving a balance in a book which purports to cover the whole field of dentistry but the caries problem is so important that it would have been better to have given more space to it at the expense of some other subjects Odontomes, for example, need not have been given so much prominence in a book of this kind, the over ingenious classification is likely to perplex rather than aid the student The section on radiology by Stanley Colyer is very good and the illustrations are really fine That on paradontal disease is also good, but the work of Gottlieb has been omitted The chapter on fractures of the jaws still seems to be written in terms of war injuries Interdental wiring, now used by many dentists with great success, is not mentioned, while the obsolete Hammond splint still finds a place The chapter on the remote effects of disease about the teeth, by Martin Rushton is well set out judicial in tone and summarises with much skill current opinion on dental sepsis and its sequelæ This edition is bigger by 150 pages than its predecessor, issued seven years ago and is in danger of getting too bulky for convenient handling though the format is satisfactory and the print easy to read

Modern Surgical Technique

By Max Thorek, M.D., professor of clinical surgery, Cook Graduate School of Medicine. London: J. B. Lippincott Co. 1938. Pp. 2045 (3 vols.). £7 10*s.*

This treatise comes from the surgical clinic of an important hospital serving the needs of a large industrial city, and it sets out to give up-to-date and practical instruction in the operations of surgery. It succeeds to the extent that the classical operations—the ligature of arteries and the standard amputations—are clearly described and well illustrated, and that a senior surgeon who has the experience to pick out what he needs from a great deal that is irrelevant, or even incorrect, will find much to interest him in the rest of its pages But in its present form it cannot be recommended to any of the various classes of reader who would be likely to turn to a work of this size The author describes in detail methods of minor importance and fails to offer the surgeon help on the performance of difficult operations where practical guidance would be welcome. In various places the methods advocated have been practised in European clinics but are practised there no longer; some of them have almost been forgotten in the clinics where they originated. The author has the services of first-class illustrators and with adequate revision the book could still be made to fill the place it ought to occupy.

Refraction of the Eye

(2nd ed.) By Charles Goulden, M.D Camb., F.R.C S., ophthalmic surgeon to the London Hospital and surgeon to the Royal London (Moorfields) Ophthalmic Hospital. London: J. and A. Churchill. 1938. Pp. 271. 12*s.* 6*d.*

To many practitioners and some ophthalmic surgeons whose interests lie in other directions the mathematical aspect of optics is irksome and difficult, but a thorough knowledge of principles is *essential* to a grasp of refraction and to the study of the eye as an optical apparatus Mr Goulden has succeeded in making his section on optics no less lucid and interesting than the more clinical parts of his book and has included all that an ophthalmologist need know about refraction. The book is mainly written around lectures given to students attending the D O.M S. course at Moorfields, and pays especial attention to methods of examination in common use. The whole work has been carefully revised, but there are no fundamental changes in this second edition apart from the account of Fincham's researches on accommodation and the rôle of the lens capsule.

Yearbook of General Therapeutics

Edited by Bernard Fantus, M S., M.D., professor of therapeutics at the University of Illinois college of medicine; and Aaron L. Goldberg, M D., assistant in the medical dispensary at the university. Chicago: The Year Book Publishers; London: H. K. Lewis and Co. 1939. Pp. 544. 10*s.* 6*d.*

There are 474 abstracts in this volume, which is bigger than any of its predecessors and covers the literature from about the middle of 1937 to September, 1938. Sulphanilamide in its *many* aspects and uses of course bulks large, and there is evidence of an ominous wave of interest in blood-transfusion and the storage of blood. Protamine zinc insulin is fairly fully considered, and so is the shock treatment of psychoses The book includes new and more precise information [illegible] therapeutic use of sex hormones and certain vitamins, a number of papers on benzedrine, and a host of recommendations and reports on less widely known new treatments, with a section on local and general anæsthetics. The abstracts follow their usual principle of giving full details and of concerning themselves mainly with procedures applicable in general practice

Quarterly Journal of Medicine

The April issue contains the following papers —

Benign Broncho-pulmonary Inflammations Associated with Transient Radiographic Shadows By Hugh Ramsay and J G. Scadding (Tuberculosis Dispensary, Walthamstow, Essex, and British Postgraduate Medical School). Twenty-nine cases meriting the above description are analysed Four were examples of unresolved classical pneumonia, the earlier acute symptoms of which were typical Four had bronchitic symptoms, and shadows characteristic of lower-lobe atelectasis The *remaining twenty-one had basal* shadows suggesting small areas of consolidation, disappearing within a few weeks, and not associated with the toxæmia of classical pneumonia, the symptoms were catarrhal, sometimes with pleuritic pain or bloodstained sputum The lesions are thought *to be areas of aspiration pneumonia*, *they* are common and have been described by many previous writers, their differentiation from tuberculous lesions is important The authors recommend for them the name "benign circumscribed pneumonia"

Hereditary Ectodermal Dysplasia of Anhydrotic Type By P. C. C. de Silva. Four cases are described, from Ceylon. Deficiency in number and development of teeth, hypotrichosis, and absence of sweating and of sweat glands are the principal and characteristic features Cases already reported are reviewed *The condition is* sex-linked and incompletely recessive

The Secretin Test of Pancreatic Function By Henrik Lagerlöf (St. Erik's Hospital, Stockholm) Chemically pure secretin is injected intravenously Duodenal content is aspirated for an hour through a special double tube which avoids admixture with gastric content and saliva Bicarbonate, diastase, trypsin, and lipase are estimated In acute pancreatitis, enzyme secretion (especially that of diastase) is diminished, with little change in the volume of pancreatic juice or its bicarbonate content. In obstructive lesions, and in chronic pancreatitis and carcinoma, all the components of pancreatic secretion are reduced in amount. The test throws light on the regulation of pancreatic function and is of differential diagnostic value—e g, in *distinguishing* idiopathic steatorrhœa from chronic pancreatitis

Sternal Puncture in the Diagnosis of Diseases of the Blood-forming Organs By Ronald Bodley Scott (St Bartholomew's Hospital) This is a detailed analysis of the findings in sternal-marrow films in 6 normal subjects and 250 cases of disease of the hæmopoietic system Sternal puncture is of greatest diagnostic value in obscure cases of "liver-deficiency" anæmia, in subleukæmic and aleukæmic leukosis and in myelomatosis. The author is among those who regard the megaloblasts dominating the marrow-picture in addisonian anæmia as abnormal cells, on this view the pathogenesis is not to be described simply as an arrest of maturation of normal cells due to lack of a nutritive principle, but rather as a hyperplasia of *primitive dysplastic erythroblasts* histologically analogous to leukopenic myelosis

The Agglutination of Suspensions of Virus-like Particles Prepared from Exudates in Acute Rheumatic Fever By G. Hardy Eagles and W. H Bradley (Lister Institute and Department of Medicine, Cambridge) Agglutination was brought about by about 40 per cent of sera from cases of rheumatic fever, rheumatoid arthritis, and miscellaneous arthropathies It occurred with the same frequency in each group It showed no correlation with the activity of the disease, the clinical evidence of streptococcal infection, the antistreptolysin titre, or the red-cell sedimentation-rate. It is believed to have some significance, since it does not occur with normal sera, but the nature of this is still obscure.

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THE LANCET

LONDON: SATURDAY, MAY 27, 1939

INFECTION AT OPERATION

NOWHERE does the new student find medical tradition more formidable than in the operating-theatre The rigorous discipline there enforced is based on the idea of operative infection as a mortal rather than a venial sin Hence it is disconcerting to find that we have lately published not one but a succession of independent papers revealing gaps in the aseptic barrier, and proving that the amount of infection at operation is not negligible even today, while our correspondence columns have contained serious criticisms of the sterility of dressings The accumulated evidence is too weighty to neglect, and the recommendations cannot be dismissed by talking about "counsels of perfection" In some large hospitals strict records are kept of the individual sepsis rates of surgical firms, and if this wise practice were more widely followed the figures might well be surprising In a small but detailed investigation Mr DEVENISH and Prof MILES[1] found that roughly 1 in 4 of one surgeon's cases became infected, whereas a second surgeon's figure was 1 in 41 In our present issue Prof CAIRNS shows that in a clinic for cranial surgery no less than a quarter of a year's postoperative deaths were attributable to infection An important distinction that emerges is that in CAIRNS's series, involving protracted operations, many types of organisms, including a dysentery bacillus and bacteria of minimal virulence, were isolated, whereas in the series investigated by DEVENISH and MILES *Staphylococcus aureus* was almost the only one found This distinction must be emphasised, because the improvements in anæsthesia and surgical technique, by lengthening the average time taken for operations, make it essential to study surgical statistics as a whole if the aseptic procedure is to be criticised Prof LERICHE in his Lister lecture[2] drew attention to the wider aspects and remote results of operative infection, phlebitis, pulmonary embolism, adhesions, keloid scars and recurrent infections are all possibly related to bacterial contamination of operation wounds

Our various contributors give their views on the source of infection DEVENISH and MILES make out a good case for infection from the surgeon's skin, and their paper would be remarkable if it did nothing more than record their finding that up to 24 per cent of gloves were punctured at operation LERICHE was chiefly concerned with air-borne germs, while CAIRNS casts a wider net, and writes also of droplet infection, water infection, and auto-infection We hope that his review will point the way to an even more elaborate study by a competent committee, for neither surgeon nor bacteriologist alone can be expected to say the last word on the whole subject There are many practical questions to be answered For instance, is it impossible to provide a satisfactory glove with a thin fabric exterior and rubber lining—a better quality of the kind worn by housewives? Many pathologists use a cotton glove on the left hand to avoid post-mortem wounds, and it certainly helps to prevent glove punctures Should not dressings be impregnated with a bacteriostatic agent? Are masks all that can be desired? An ineffective mask will actually accumulate organisms, and then discharge them in bulk on talking or coughing, and though a Cellophane mask is effective it causes dimming of spectacles Again, ought we to bother about air sterilisation? HART[3] in America believes in it strongly, whereas DEVENISH and MILES doubt its importance, they calculate that only 11 organisms per hour will be introduced into a wound In HART's clinic an incidence of 33 per cent of post-operative infections was lowered to 3 8 per cent by the use of ultraviolet light, previously, rigid precautions such as masking, wall painting and air-conditioning had been ineffective LERICHE is likewise convinced that air sterilisation is possible, and greatly to be desired, and many surgeons in every country are in agreement TRILLAT's work on aerosol sterilisation of air was described in a paper in our pages recently by PULVERTAFT and his co workers[4] and phenol vapour has been used and recommended for a similar purpose The surgeon who decides to sterilise the air of his theatres has plenty of effective methods at hand

It appears that, after a long period in which surgeons have been rather too easily satisfied with their aseptic technique, our practice if not our principles must be reviewed Sepsis rates involving a quarter to a third of the patients, mortality rates due, in a quarter of the cases, to infection, gloves and masks with which the surgeon emulates the ostrich, dressings that contain tetanus spores, talc that is difficult to make innocuous, needles and syringes often inadequately sterilised, and the circumambient air, capable perhaps of bringing disaster when everything else is satisfactory—these are facts that must make the conscientious operator reflect The problem has at least been exhaustively stated That there should be a problem at all is perhaps a consequence of unwise separation after the marriage between surgery and bacteriology which made modern surgery possible It is time, we suggest, for a restitution of bacteriological rights

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[1] Devenish, E A, and Miles, A A *Lancet* May 13 1939 p 1088

[2] Leriche, R, *Ibid* April 8 1939 p 803

[3] Hart, D *Arch Surg Chicago* 1938 37 [illegible]

[4] Pulvertaft, R J V, Lemon, G C, and Walker, J W *Lancet* Feb 25 1939 p 443

PURPOSES OF PUNISHMENT

"Discontent," said Rasselas, "will not always be without reason under the most just and vigilant administration" Proud as we may be of the British administration of criminal justice, we are sometimes surprised by the consequences of its characteristically national system of compromises. While the police forces and the director of public prosecutions strain every nerve to bring the criminal to justice, the law-courts put obstacles in their way. Prosecutions must be conducted with restraint; rigid rules of evidence must be observed; the accused must have a sporting chance. The victories of British justice, in fact, have been won on the playing-fields of Eton. Twice in the present month men who have killed women have been mercifully found guilty of manslaughter because the fact that they had previously committed similar crimes had to be kept from the jury till after the verdict. A juryman must often be amazed that he is not allowed to have the very information that would most influence his decision. The effect is that these offenders commit "manslaughter," go to prison, come out, and do it again. If the object of punishment is preventive, it is not being achieved; the community is not being protected, for the multiple offender, whether in homicide or house-breaking, is not detained till he is socially safe. If the object is reformatory, there is the like failure. Are we still working on the retribution theory or what other principle governs our penology?

Fresh in the memory are the heavy sentences passed on the misguided Irishmen who think that bombs are the best means of commending to the English public a particular view of Irish nationalism. What is the exact purpose of the long terms of imprisonment passed in such cases? If punishment is meant to be preventive, the right procedure one would suppose would be to ensure that these men are kept out of mischief until the situation—or their opinions—shall have changed and the public safety is assured. To assign "twenty years" to one and "two years" to another may be an index of the indignation aroused by the particular prisoner, but it is hard to see any sounder reason for it. If neither the tradition of English courts nor the present state of public opinion yet favour the indeterminate sentence, a time may well come when reformers will persuade us of its practical necessity. A complementary extension of supervision after discharge from prison might do something to reconcile the principles of individual liberty and public safety. The present graded tariff of penalties for offences seems often unsatisfactory for the hardened recidivist as well as for the juvenile offender, and for both of them a vaguely lengthy course of enlightened institutional care and after-care may prove to be the best remedy.

Sir Alexander Maxwell, the permanent under-secretary of state at the Home Office, spoke lately of the two schools of criticism. The danger with which society was faced in the treatment of crime, he said, was that of unscientific and sentimental assumptions. There were not only the tender-minded sentimentalists; there were also the tough-minded sentimentalists, so eager for the suppression of crime that they insisted on the "strong" policy, even though in this or that type of case the policy had been proved useless We have all been made aware by certain foreign examples that the maxim *salus populi suprema lex* can lead to the dangers of dateless disappearance within the fences of the concentration camp Perhaps, however, even such institutions might seem less abominable if we had confidence in the motives and character of those in charge of them, and the governments concerned do at least seek to justify their method by relating it to some rational basis. Our own system, if system it can be called, seems to arise from a muddled compromise between vengeance, deterrence and remedial treatment. In fact, to foreigners who inquire what is our theory of criminal justice we can only reply that, as usual, we have no theory at all.

THE PRESENT POSITION OF DENTISTRY

On May 10 Sir Francis Acland presided for the 34th time at the Dental Board of the United Kingdom—he has missed only two sessions since the board was set up. It was in June, 1916, after the memorial service to Lord Kitchener, that Sir Almeric FitzRoy, then clerk to the Privy Council, asked him to preside over a committee to investigate the extent and gravity of the evils of dental practice by persons not qualified under the act of 1878. On the report of that committee was based the Dentists Act of 1921, and when the Dental Board was constituted Sir Francis became its chairman. "The lay stopgap," he remarked, "can step out now with a good conscience and make way for a member of the profession." His farewell was affectionate on both sides

Most of Sir Francis Acland's last address was occupied with a survey of the present position of the dental profession. The Dentists Register now contains 14,400 names and is likely for some time to remain steady at that figure; so the fifteen-year period 1928–42 will begin and end with the same number of dental practitioners But there is a difference in quality, for now there are nearly 8500 graduates and licentiates against 6000 who are qualified by experience alone. Rather surprisingly there are still 199 hardy veterans registered under the act of 1878, who thus appear to have been in practice for at least sixty-two years. The situation in general gives the retiring chairman some concern. It is admitted that during the last twenty years the demand for dental surgeons has much increased. Ten years ago there were 480 school dental officers, now there are 800. The recent valuation of approved societies has entitled at least two million more insured persons to dental benefit. Each of the three service departments is requiring more dentists, in the Army Dental Corps, for example, the establishment of officers has increased by 30 per cent. in the last eighteen months. And finally the public demand for dentistry has increased as a result of health propaganda The Dental Board, however, has not been able to do as much as its chairman would have wished to enlighten the public about the good that dentists can do them Six full-time demonstrators work in schools or at health-weeks, 50 copies of nine films are in constant circulation, and some 200 lectures a year are given in schools and factories, but to produce any considerable effect tens of thousands of pounds would, he thinks, have to be spent on public posters and press announcements To meet this need Sir **Francis** foreshadowed a scheme under which propaganda services might be expanded by collecting a large sum of money from firms which advertise dental requisites as well as from the dental profession itself

In the meantime the dental graduates are absorbed into practice as soon as they appear There is no unemployment Dental practitioners seek assistants in vain, and the competition for public appointments is poor That is the position of the dental profession as Sir **Francis Acland** leaves the chair, and there is no one who has done more than he to raise its status His doubt whether the numbers are sufficient to meet future needs should command attention

PIGS, WORMS AND INFLUENZA

Swine-influenza is a disease prevalent in the middle western United States every winter It was shown by **Shope**[1] that two agents are necessary for its development, *Hæmophilus influenzæ suis* (a close relative of Pfeiffer's bacillus) and the swine-influenza virus This last was later found to be related to the virus of human influenza The pig disease spreads readily by contact during the winter, but disappears during the summer, during that period the presence of the virus in the herds has not been detected **Shope**[2] has now obtained evidence suggesting that in interepidemic periods the virus may persist in lungworms, of which two species regularly infest pigs in the middle west

These worms, *Metastrongylus elongatus* and *Chœrostrongylus pudendotectus*, inhabit the bronchioles at the base of the pigs' lungs, embryonated ova are passed in the fæces and are duly ingested by earthworms, in which they hatch and develop, after weeks or years the earthworms may be eaten by pigs, and the liberated lungworms will then find their way to the pigs' respiratory tracts **Shope** took fæces and bronchial exudate containing lungworms and their ova from pigs ill with swine-influenza, he then fed this material to earthworms, and after periods of 1–3 months gave the earthworms to pigs to eat, in hopes that these would then go down with swine influenza, but nothing happened Undismayed by this failure, he persevered and he was later able to show that influenza —proved genuine by the recovery of virus—could regularly be induced by intramuscular injections of *H influenzæ suis* into pigs previously fed with infected earthworms The first injection of the bacteria, however, never gave rise to influenza, it appeared that the pigs had first to be sensitised to the organism, when a subsequent injection would lead to the results described Injections of the hæmophilus into pigs not fed with infected earthworms never produced influenza, nor did this follow ingestion of infected earthworms without the provocative injection of bacteria Why this sensitisation and provocation were necessary is quite obscure, but it is probable that the rôle of the *H influenzæ suis* is non specific in this type of experiment, since **Shope** has succeeded in producing influenza by a single intrapleural injection of calcium chloride into suitably prepared pigs

Proof that a virus can be carried in an intermediate helminth host during interepidemic periods would give epidemiologists and students of other virus-diseases much food for thought The importance of the possible inferences makes it necessary that **Shope's** experiments should be studied critically and repeated carefully It is unfortunate that he has so far been unable to demonstrate virus directly, either in presumably infected earthworms, or in the lungworms of swine thought to be ripe for provocation, such findings would prove his case conclusively The necessity for a rather roundabout method of proving infection of the worms calls for particularly elaborate controls, satisfactory as these have been so far What may seem to be a weakness in **Shope's** case may, however, turn out to be its most important feature His own work with the rabbit papilloma[3] revealed that a virus may be present in the lesions it is causing without being directly demonstrable by transmission experiments Such a finding with a virus not of the tumour-virus sort would be a substantial extension of our knowledge These results with swine-influenza may well prove important for epidemiological studies in America, and may give a clue to the distribution of the disease in other countries While they make us speculate once more where human influenza virus persists in interepidemic times, knowledge of human parasitic helminths does not render it very probable that the results will be directly applicable to the disease in man Yet human influenza virus is being shown in the laboratory to be capable of infecting more and more animal species, some of these and their helminth parasites may one day be shown to come into the picture

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[1] Shope R E J exp Med 1931 54 373
[2] Shope, Science May 12 1939 p 441
[3] Shope J exp Med 1937, 65 219

"The recent legislation to restrict the activities of bucket-shops, although admittedly needed for many years, only came about through a succession of scandals too widespread to be ignored The patent medicine restrictions in America were similarly forced on the Government by a series of appalling cases of fraudulent misrepresentation and criminal carelessness, culminating in the death of seventy three people from a new drug which was put on the market without being tested and which proved to be highly toxic The patent medicine traffic is more dangerous to the country than the bucket shops, and the facts are beyond dispute Yet it seems we must wait until some tragic occurrence shocks public opinion from its apathy before the Government will think it worth while sparing a few hours of their time to pass legislation without which the efforts of the Ministry of Health to improve the physical well being of the nation have no real basis"—Prof L. C. **Dodds**, *Middlesex Hosp J* May, 1939, p 77.

ANNOTATIONS

IN MEMORY OF SIR SQUIRE SPRIGGE

A FUND for the endowment of scholarships for the education of orphan girls of medical parentage, opened last week by the Medical Insurance Agency at its annual meeting, is to bear the name of Squire Sprigge, editor of this journal from 1909 to 1937. It will be recalled that the agency was the creation thirty years ago of the then editors of the two leading medical weeklies. Sir Dawson Williams has been commemorated by the foundation of a scholarship for boys which bears his name, tenable at Epsom College; the agency supplied the funds for this endowment, now completed by instalments spread over a period of six or seven years. A similar endowment, this time for the education of girls, is to be built up as a memorial to Sir Squire Sprigge, whose family concur in the view that it was a cause he had deeply at heart For many years the Medical Insurance Agency has advised members of the medical profession how to insure their lives and their effects to the best advantage, and the profit of this collective insurance has, after allowing clients a substantial rebate on their premiums, liberated a large sum of money for the support of medical charities. In establishing the Sprigge fund the agency has voted an initial instalment of £2100 for girls' scholarships The administration of the fund will be placed in the hands of Epsom College, which already awards fifteen or sixteen St Anne's scholarships (for girls) under a bequest of many years' standing. The selection of the beneficiaries will be in the hands of the conjoint committee of the college, which consists of ten members nominated by its council and ten others nominated by various medical bodies from different parts of the kingdom It is understood that it is in the minds of the committee of management of the agency to build up the fund as occasion permits to a total at least as great as that of the Dawson Williams fund; and in view of the much larger endowments existing for male than for female orphans, there seems to be a case for going even further in this direction.

WEAK BACKS

ACCORDING to Knudsen,[1] who has examined some 40,000 backs in the last six years, a normal back is one in which, when the arms are stretched well up and carried backwards, a straight furrow runs from neck to sacrum, slightly deeper in the sacral region; and when the examinee stoops to touch his toes, the curve is completely even Any commencing deformity arising from localised loss of mobility will show as a partial disappearance of the furrow, or an unevenness of the curve Anyone who has examined schoolchildren in this country will be familiar with these patches of rigidity in weakly, stiffening backs that appear normal to the casual eye In an article on the infant's back last year Knudsen [2] suggested that allowing an infant to sit up too early may lead to a kyphotic yielding of the spine at or near the dorso-lumbar junction. The abnormality may set and be retained in adult life, as Knudsen again points out when he deals with older backs This upper lumbar "sitting kyphosis" can probably arise in young children as well as infants, for it is common in schoolchildren in this country. One likely reason is the vogue for cross-legged seated positions in gymnastic lessons, aiming at counteracting the formerly prevalent lordosis. This position, in addition to school seating, wearies a weak and growing back and allows it to sag at a mechanically weak part. The long round back, in which the normal lumbar curve is obliterated and there is the lowest possible compensatory lordosis at the fifth lumbar vertebra, is another weak type often found in adolescence This kind of back Knudsen finds is usually mobile, and if the muscles are called into action and a strong "stretch" position taken a good posture may be attained. The short round back with its accompanying strong lordosis is often rather sturdy and stiff, and can even be found in a muscular labourer In the test positions the upright furrow is absent in the dorsal region and accentuated in the lumbar, and on flexion the lumbar region does not curve but remains board like. A less rigid form of this type is not infrequent at school age The abnormally straight back, probably more common in the "back-board" days and sometimes produced artificially by training, lacks, as Knudsen says, the suppleness and strength of the normal back, and indeed loses the whole mechanical advantage of the normal curves.

STORY OF MEDICINE STAMP DUTIES

RESISTANCE to the proposal to annul the medicine stamp duties may be offered when the relevant clause in the Finance Bill is reached in the House of Commons The first item in the schedule of twelve enactments relating to the duties that the clause seeks to repeal is the Medicine Stamp Act, 1802 It should be noted, however, that the statute first embodying the principle upon which the duties are based was introduced in the Medicine Stamp Act of 1783; that act was replaced by another two years later and was repealed by the act of 1802 In attempting to understand the motives prompting the legislature of 1783 to single out medicines and impose upon their retail sale a restraint in the form of taxation it is necessary to look back at the conditions of the time

The wars with France, Spain and America were over, the treaties of Paris and Versailles had just been concluded, and Parliament set to work to find the means, a colossal sum in those days, to pay for the indiscretions of George III's advisers Cavendish, chancellor of the exchequer in the coalition ministry of Fox and North, explained his financial proposals on May 26, 1783; one of them was to place a tax on medicine which he estimated would yield £15,000 in a full year. Events showed that this was an over estimate, but even had the full amount been collected it would have been a mere drop in the ocean of money needed by the state at the time The very smallness of the sum that the chancellor expected to obtain from the tax on medicines suggests that had revenue been his main object he would have chosen a wider range of commodities for his purpose. This view is supported by the fact that medicines sold by persons who had served a regular apprenticeship to a surgeon, apothecary or druggist were specifically exempted from the tax, and persons in the category indicated were not required to take out the vendor's licence If, then, revenue was not the chancellor's object, was it not to encourage the public to buy their medicines from trained vendors and to discount those gross forms of quackery that were prevalent at the time and had led a contemporary writer to call England the "paradise of quacks"? Parliament had recently voted £5000 to a Mrs Stevens for a solvent for stone—notwithstanding which, as William Wadd observed some years later, "there have been as many human calculi since formed by his majesty's liege lithotomical subjects as would macadamise one side of Lincoln's Inn Fields" Oliver Goldsmith, who had poured ridicule on the quacks as no writer has ever done or could do, had not long been dead and the celebrated Samuel Jessop who in 21 years swallowed 226,934 pills besides 40,000 bottles of medicine was still alive Is it not probable that Cavendish meant to make no more payments to the likes of Mrs Stevens and meant to protect the likes of Mr Jessop from their folly ?

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[1] Knudsen, K. A., Ugeskr Laeg April 27, 1939, p. 524

[2] Lancet, 1938, 2, 406

Since the first act of 1783 legislation still maintaining the principle that the proper vendor of medicines is the trained vendor has been in force, the sign post erected by the chancellor of the exchequer in 1783, pointing the way to the trained vendor, has been repainted time after time, yet now another chancellor is proposing to take it down

COWPOX VIRUS

THE exact relationship between the viruses of cowpox and vaccinia has long been in doubt Some authorities, among them Gins, have held that these two viruses are the same, and that cowpox is not a disease sui generis but an infection of human origin with either smallpox or vaccinia virus It is true that some outbreaks of cowpox might be explained in this way, but in many there has been no apparent association with cases of smallpox or recently vaccinated people, and it is this discrepancy that has been largely responsible for the alternative hypothesis that cowpox is a natural disease of cows due to a specific virus, the evidence for which was set out by Ledingham[1] in 1935

It might be thought surprising that this question should have remained so long unsettled, but the viruses of the animal pock diseases are a closely related group which cross protect often to a high degree, and it is only by detailed study, more particularly with regard to antigenic composition, that the specific differences are made clear Recent work by Downie[2 3] has, however, given us the long-awaited answer He has made a comparative study of three strains of vaccinia and three of cowpox virus, one of which was isolated from lesions on the hands of a cowman on a farm in Sussex during an outbreak which was described by Davies, Janes and Downie[4] last year Downie first of all studied the histology of cowpox and vaccinial lesions produced experimentally in the rabbit and guineapig and on the chorio allantoic membrane of the developing hen's egg He observed definite differences between the two The cowpox virus produced much less necrosis of cells, and the inclusions it gave rise to were homogeneous acidophil bodies closely resembling those of ectromelia and quite unlike the ill defined inclusions of vaccinia virus, which appeared to be largely lacking in acidophilic inclusion material Further, the cowpox lesions were hæmorrhagic whereas those produced by vaccinia virus were not The difference was fully confirmed when the viruses were examined serologically Antisera made in the rabbit gave a considerable degree of cross neutralisation, though the neutralising titre was always higher with the homologous virus But by cross absorption experiments Downie was able to show that although the cowpox and vaccinia contained antibodies in common, each possessed antibodies specific for the homologous virus His conclusion that the viruses of cowpox and vaccinia are closely related but specific viruses seems amply justified. It remains now to determine what relationship exists between the virus of cowpox and smallpox and the status of the virus which Lipschutz has described as paravaccinia virus Histologically the lesions produced by the so called paravaccinia virus closely resemble those of the virus of cowpox, and it may be that the "nodes" described by Danish workers on the hands of milkers and ascribed by them to paravaccinia virus are, in fact, cowpox lesions

PLASMA TRANSFUSION

IN certain conditions transfusion of plasma is theoretically preferable to transfusion of whole blood The over concentration of the blood in shock, especially after burns, cannot very well be relieved by adding whole blood, and replacement of the lost fluid by plasma is a more rational method of treatment Unfortunately there is no convenient way of storing plasma so that it may be ready for immediate injection The result has been that, in this country at any rate, little experimental work has been done on these lines In the United States more interest has been shown, but Lehman[1] says that no one has previously described the use of plasma drawn from a "blood bank." If a supply of stored blood is available it is an easy matter to draw off the supernatant plasma, if a few red cells are included no harm is done The red cells remaining behind can be resuspended in saline and transfused into anæmic patients who have no need of the plasma fraction Lehman expresses satisfaction with the transfusion of plasma obtained from stored blood, and since his procedure is simple and sensible we hope it will be tested here

FEVER IN CARDIAC FAILURE

THE continued fever without obvious cause sometimes seen in cardiac patients always arouses the disturbing fear of infective endocarditis, but though its explanation is obscure it often seems to be of little significance Lemant[2] describes the case of a man of 38 who had had rheumatic fever at the age of 15, and five years later, during a second attack, had shown signs of mitral disease He complained of palpitation and slight precordial pain, and on being put to bed these symptoms improved, but it was discovered that he was running an irregular pyrexia for which, even after a most searching examination, no organic cause could be found Struck by the occurrence of frequent skin flushes in this patient his attendants applied various tests to investigate the condition of his autonomic nervous system, and convinced themselves that he was suffering from a disequilibrium of this system to which they ascribed the variations in his body temperature His irregular fever was clearly of no great moment, for after a period of rest he returned to work without ill effects

The possibility that raised rectal temperature may occasionally be an integral part of cardiac failure has been previously recognised and the phenomenon explained on more tangible grounds Murray Steele[3] pointed out that in these cases the raised temperature is closely associated with the heart failure and disappears with it. He was able to show that, even in normal subjects, a relatively mild and short obstruction of the peripheral circulation produces a rise in rectal temperature, and he suggested that the slowing of the skin circulation resulting from cardiac failure diminishes the amount of heat lost by the skin, so that more heat is retained in the body. On this view the "fever" is merely evidence of a defective peripheral circulation.

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[1] Ledingham J C G *Proc R Soc Med* 1935 28 73
[2] Downie A W, *J Path Bact* March 1939, p 361
[3] Downie *Brit J exp Path* April, 1939 p 158
[4] Davies J H T Janes L R and Downie *Lancet* 1938, 2 1531

[1] Lehman E P *J Amer med Ass* April 8 1939 p 1136
[2] Lemant, J, *Ier Médecine* February 1939 p 104
[3] Steele, J M, *Amer Heart J* 1937, 13 542

GRADING OF CARCINOMAS

PATHOLOGISTS are now able to give surgeons much practical help in estimating the malignancy of carcinomas of the colon and rectum, and in making a prognosis. One method that has established its position is that described in 1932 by Dukes,[1] in which operation specimens are dissected after fixation on a frame, and divided into three groups, A, B and C according to the depth of spread In group A the growth is limited to the bowel wall; in group B it has penetrated the wall; and in group C there are metastases in the lymphatic glands. It has been known for some time that in the A cases the expectation of cure is extremely good, the five-year survival-rate being over 90 per cent. This has been confirmed by Grinnell,[2] of Minneapolis, who reports that all of 27 A cases survived for five years, whereas in the C group the five-year survival-rate dropped to less than a quarter

Grinnell also discusses the value of grading based on histological characters for purposes of prognosis. He finds that four criteria are useful—glandular arrangement, invasiveness, nuclear polarity and the number of mitoses—and on this basis he divides the tumours into three instead of the four grades of malignancy described by Broders He finds that the proportion of grade 1 cases (the least malignant) is higher in the colon than the rectum (49 as against 30 per cent), whereas the proportion of grade 3 cases is higher in the rectum than the colon (32 as against 16 per cent). His figures accord with the surgical experience that the results of resection of the colon for carcinoma are relatively good A follow-up shows that the expectation of surviving five years is three times as great in grade 1 as in grade 3 cases.

There seems to be good reason for adopting both methods of grading for routine use, and the acceptance of Grinnell's suggestion of recognising only three grades of malignancy should make it easier to compare the two methods and to standardise the classification of carcinomas

PROCIDENTIA OF THE RECTUM

THE treatment of complete prolapse of the rectum is one of those recurring problems with which every surgeon is concerned In the last few years, following the teaching of Ernest Miles, many of these cases have been operated on by the method of recto-sigmoidectomy: this is equivalent to Mikulicz's operation of amputation, the redundant pelvic colon being pulled down until it is taut and delivered externally A circular repair by suture is then carried out The operation is not as difficult or as dangerous as would appear, in fact the mortality is very small, and the results are excellent considering the advanced age of many of these patients and the patulous condition of the external sphincter often present before operation

Pemberton and Stalker[3] from the Mayo Clinic think that recurrences of rectal prolapse after sigmoidopexy are due to inadequate fixation of the rectum, and to meet this they have introduced an abdominal operation with some novel features Incisions are made through the peritoneum on each side of the lower pelvic colon and rectosigmoid, and the rectum is stripped up from the hollow of the sacrum as far down as the coccyx. The rectum is then pulled up until it is taut and is fixed in this position by suturing it to the lateral walls of the pelvis, the anterior abdominal wall, or the back of the uterus. The peritoneal flaps are carefully closed by suture They claim that after this operation the rectum becomes fixed by scar tissue in the hollow of the sacrum in its new taut position. They report 6 cases in which the operation was done, some of which are admittedly recent, but the method appears to be sound

Any minor operation that would produce equivalent results would be welcomed, and the claims made by Gaume[4] should certainly be tested as soon as possible. His is an injection method, using 5 per cent quinine and urea hydrochloride, the solution being injected, 3–5 minims at a time, through multiple punctures with the prolapse in the fully extruded position The needle is inserted into the muscular wall of the prolapsed rectum and according to the length of prolapse five to seven circular rows of punctures are made The prolapse is replaced and some form of intrarectal support is given, either by means of gauze packing or by an inflatable rubber bag with a flatus tube running through it (a "colpeurynter"). A firm anal pad and T-bandage are then applied and the patient rests in bed for 48 hours only. By this method, which Gaume has used in 9 cases, a fibrinous exudate and fibrosis are said to be produced in the rectal wall, forming a permanent splint which is sufficient to prevent recurrence.

DURATION OF GESTATION

AT the University Maternity Hospital of Freiburg, Hauptstein and Stöckert[5] have undertaken a most painstaking investigation, starting with the suspicion that the 280 days traditionally allotted to human gestation might not hold good today They also hoped to assess the effect on the length of gestation of the emotional strains and physical stresses in Germany during and after the war Their researches deal with three periods, each of nine years. the first from 1905 to 1913, the second from 1915 to 1923, and the third from 1929 to 1937 During these twenty-seven years 29,039 babies were born in the hospital, but only about a quarter of this number were suitable for study, for it was necessary to eliminate abnormal conditions calculated to confuse the issue by confining themselves to cases in which labour had begun spontaneously and had not lasted more than 30 hours They also stipulated that the child should be living, and should weigh at least 2800 g at birth These and other restrictions reduced their total confinements to between 7000 and 8000 out of more than 29,000 They conclude that the average duration of normal gestation is between 281 and 282 days, and that gestation is longer for primiparæ than for multiparæ, even when allowance is made for the relatively longer duration of labour in primiparæ. Baby girls are a little slower to arrive than baby boys, a difference which the authors make no attempt to explain No appreciable difference could be demonstrated in the three periods studied Pregnancy seems to run its pre ordained course even in times of national distress and nervous tension

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[1] Dukes, C, *J Path Bact* 1932, 35, 323

[2] Grinnell, R S, *Ann Surg* April, 1939, p 500

[3] Pemberton, J de J, and Stalker, L K., *Ann Surg* May, 1939, p 799

[4] Gaume, J M, *Med Rec* April 19, 1939, p 273

[5] Hauptstein, P, and Stöckert, M, *Dtsch med Wschr* April 21, 1939, p 630

WAR-TIME DUTIES

SOME 95 per cent of the medical profession in this country have told the British Medical Association what they are prepared to do if there is a war In each of the association s divisional areas a local emergency committee has been established, and these bodies are now making provisional arrangements to meet local demands for medical personnel[1] In consultation with local hospital authorities and officers of the Ministry of Health they have to nominate doctors for duty at first aid posts and hospitals, and for medical boards examining recruits Before doing so they must secure the consent of the person concerned, and in general they are asked not to allocate to local duties practitioners under 35 In London the central emergency committee of the B M A will confirm or criticise the local arrangements in the light of demands that may be made by the military services In time of war all such demands will go to the central committee, which will from time to time inform the local committees how many doctors they must furnish for H M forces, bearing in mind any special strain that is already thrown on the medical resources of their area The Government has accepted in principle the central emergency committee s view that an official body should be created to control all military demands for medical personnel and ' coordinate civilian medical services with the medical services of the defence forces ' It has also agreed that the central emergency committee shall have full authority to advise this body on *all* questions of medical personnel in time of emergency Meanwhile the service departments have consented to consult the committee before accepting for the Territorials R N V R or R A F medical reserve men who have been qualified for more than three years At the same time the B M.A is anxious to encourage applications for commissions in the Territorial Army or the reserves, and although the age limit is nominally 32 there is, it is stated, no reason why practitioners in the early forties should not apply Apart from such applications, members of the profession who have returned an inquiry form but have not yet been allocated to local or general duty are advised to carry on with their *normal* work and await the time when their local emergency committee approaches them with suggestions

This sketch of the organisation now in being takes no account of certain special groups Pathologists fall outside the general scheme, for their work is to be disposed by a joint subcommittee of the central emergency committee and the Medical Research Council Medical practitioners engaged predominantly in scientific work will be dealt with by a committee of the Royal Society, in coöperation with the central emergency committee, while the war-time duties of consultants or specialists now on the staff of hospitals (voluntary or municipal) in the county of London are the sole concern of the committee of reference set up by the Royal Colleges of Physicians and Surgeons Further it should be noted that the central emergency committee will receive requests from bodies other than the military services, and will consult with the local committees as to whom they should "earmark" for the work. As for the maintenance of doctors given public duties during an emergency, it has been agreed that whole time work at a hospital treating casualties shall carry a salary of £500 a year, plus £100 if board and quarters are not provided (This would not apply to house physicians and house-surgeons, who would be paid at normal rates) There will be additions for more onerous service and practitioners in positions of special responsibility may receive up to £1500 a year It should be understood, however, that none of the hospital posts would represent Government employment, the holders would be employed and paid by the hospitals, though the Government would reimburse the hospitals on an agreed scale For work at first aid posts a fee of 1½ guineas is offered for a session of two hours, or 3 guineas for a longer period in any one day A retaining fee of 20 guineas per annum is meanwhile to be given practitioners charged with training nursing and first aid personnel

The central emergency committee, though it remains a committee of the British Medical Association, has been reconstituted to make it representative of all branches of the profession, and now contains, among some 35 members, nominees of the three royal colleges in London, the Society of Medical Officers of Health, the Medical Women's Federation, the Medical Research Council, and the medical committee of the House of Commons In view of the interest of its activities to all who have answered its questionnaire we hope that future statements on its work and wishes may be circulated as widely as possible

ESCAPE

THE Medical Society of Individual Psychology is holding a series of discussions on various means of flying from reality On May 11, in reading a paper on the escape into drugs and alcoholism, Dr Desmond Curran criticised the term "escape" on the ground that it is extremely general and extremely vague To ascertain its meaning, he said, he had consulted a psychiatric friend and the Oxford Dictionary The friend suggested that it was "the new term for anyone who tried to be happy" The dictionary provided a wide variety of meanings, and it seemed that the word could be applied to activities good or bad successful or unsuccessful In psychiatry, however, its use is restricted to activities which, if not reprehensible or unwise in themselves, nevertheless result in, or illustrate, failure or lack of success Dr Curran objects to the word because it is employed to denote the *state* of mental ill health, while on the other hand the ill health is regarded as a *means* of escape Thus "escape" is made to double the rôles of a description and an ætiological explanation, and believing that it is poor as the first and often misleading as the second, he thinks the term should be avoided in psychiatry and left to journalists

WE regret to announce the death at Cardiff on Tuesday of Dr DONALD ROSE PATERSON, consulting surgeon for diseases of ear, nose and throat to the Royal Infirmary Dr Paterson was in his 77th year

Dr F T H WOOD, medical officer of health for the county borough of Bootle, has been elected president of the Society of Medical Officers of Health for the session 1939–40 He will take office on Oct 1

Dr J T IRVING, head of the department of physiology of the Rowett Research Institute Aberdeen, has been appointed to the chair of physiology in the University of Cape Town

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[1] *Brit. med J* May 20 1939 suppl p 277

CONTROL OF THE COMMON FEVERS

THE PNEUMONIAS

Reviewed by DR. ROBERT CRUICKSHANK, *Pathologist, L.C.C. Group Laboratory, North-Western Hospital, Hampstead*

PNEUMONIA is notifiable as "acute primary pneumonia," which includes lobar pneumonia and primary bronchopneumonia but not the secondary pneumonias that follow other infections, such as measles. The only notifiable form of secondary pneumonia is "acute influenzal pneumonia." Some idea of the age-incidence, sex-incidence, and case-mortality of pneumonia may be obtained from table I.

TABLE I—AGE-INCIDENCE, SEX-INCIDENCE, AND CASE-MORTALITY OF PATIENTS NOTIFIED AS PNEUMONIA AND ADMITTED TO THE CITY OF GLASGOW ISOLATION HOSPITALS JUNE 1, 1918–DEC. 31, 1928

Age-groups	Males			Females			Both sexes		
	Cases	Deaths	Mortality per cent	Cases	Deaths	Mortality per cent	Cases	Deaths	Mortality per cent
0– 5	5765	1524	26·4	4562	1052	23·1	10,327	2576	24·9
6–10	1592	85	5·3	1039	54	5·2	2631	139	5·3
11–15	958	37	3·9	535	21	3·9	1493	58	3·9
16–25	2226	227	10·2	887	125	14·1	3113	352	11·3
26–35	1384	261	18·9	912	183	20·1	2296	444	19·3
36–45	1071	325	30·3	580	162	27·9	1651	487	29·5
Over 45	1385	643	46·4	634	253	39·9	2019	896	44·4
	14,381	3102	21·6	9149	1850	20·2	23,530	4952	21·0

LOBAR PNEUMONIA

Some epidemiological features.—Lobar pneumonia is essentially an infection of adolescence and manhood. It accounts for nearly two-fifths of all the pneumonia deaths, and about 70 per cent. of them (7396 in 1934—a non-influenza year) take place in the age-group 20–65. Lobar pneumonia is a specific infection with a low but undoubted infectivity, comparable perhaps to cerebrospinal fever. The pneumococcus is responsible for 95 per cent. of the cases, most of which are associated with a limited number of the 30 or so pneumococcus types; in different areas of this country types I and II together account for 45–75 per cent. of cases in adults. However, the conception of the disease as a specific infection is not unreservedly accepted, and the following arguments have been adduced against it: (1) lobar pneumonia is mostly sporadic, and it is ordinarily difficult to trace any connexion between cases; (2) 30–60 per cent. of the population, under normal conditions, carry pneumococci in their throats, although these are rarely the types that cause lobar pneumonia; and (3) the pneumococcus may, under certain artificial conditions, change its type (Griffith 1928). Why not then a natural change, when conditions are propitious, in the pneumococcus already present in a person's throat to a virulent type which will initiate the pneumonia? The argument cannot be pursued further here, and it must be sufficient for the moment to state briefly the evidence in favour of the opposite view, for which are required specific proof of the infectivity of lobar pneumonia and, if possible, an explanation of how the infection is spread. Epidemics of lobar pneumonia are rare, but in recent years several outbreaks have been recorded and carefully studied; in all of them the infecting organism was either pneumococcus type I or type II.[1]

For example, 12 cases of lobar pneumonia and 2 of otitis media due to pneumococcus type I occurred over a period of four months in an isolated orphanage of 87 boys aged 5–20 (Strøm 1931).

Smillie (1936) described a localised epidemic of lobar pneumonia due to pneumococcus type II in a Veterans' Hospital, which began in March, died down in the summer, and flared up again in the autumn; the spread of infection and its recrudescence were traced directly to carriers of the epidemic strain.

An outbreak on a larger scale was recorded by Nichols (1917) among American recruits in a camp of 43,000 men during the winter of 1916–17; 78 per cent. of the cases were due to pneumococcus types I and II, and there was evidence of tent, company, and regimental contagion.

Although more than one case of lobar pneumonia in a family is uncommon, numerous instances of familial spread have been collected (Cruickshank 1933a, Tilghman and Finland 1936)—e.g., a family of father, mother, and two grown-up sons all developed a pneumococcus type II infection within a period of three weeks, and all but the mother died.

Similar instances of contact infection between patient and visitor or attendant-nurse are familiar to those with much experience of lobar pneumonia and have been bacteriologically verified. But, since most cases of lobar pneumonia appear out of the blue and have no obvious connexion with another patient, some source other than the acute case must exist if the infectious nature of the disease is to be proved. The reservoirs of infection are contact and convalescent carriers of the epidemic strains, and possibly the pneumococcus-infected dust of rooms where pneumonic patients have been nursed (Stillman 1916, 1917, Christie 1932, 1934, Cruickshank 1933a). The contact, usually temporary, carrier exists in the family of the patient nursed at home and among nurse and patient contacts of hospital cases. The convalescent carrier is most often a patient with some pathological condition of the upper respiratory tract (infected tonsils, turbinates, or sinuses, or chronic bronchitis), and in him the carrier state may persist for many months. The apparent rarity of carriers of the epidemic pneumococci among the general population may be due to the selection of samples from occupations where pneumonia is rare, for many years ago Sydenstricker and Sutton (1917) found a carrier-rate of 12 per cent. of types I and II pneumococci among the Bethlem steel workers in whom pneumonia was at the time more than ordinarily prevalent.

Pneumonia is a winter disease, and, if the analogy with cerebrospinal fever means anything, we should expect lobar pneumonia to attain its maximal incidence in the spring months. Madsen (1930), from the separate notifications of lobar pneumonia and bronchopneumonia in Denmark, has shown that lobar pneumonia has its peak later in the winter than bronchopneumonia, and MacGregor (1933), from death-registration figures in Glasgow, found

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1. Schroder and Cooper's (1930) epidemic of respiratory infections among children ranging from coryza to lobar pneumonia due to pneumococcus type V is an exception, but type V is one of the "epidemic" types.

that lobar pneumonia had a regularly recurring plateau of greatest frequency in the first four months of the year, whereas bronchopneumonia was more erratic

Despite the foregoing evidence that lobar pneumonia is *an infectious disease*, a small proportion of the cases are possibly autogenous infections, among them pneumococcus type III infections, which are commonest in older and debilitated persons, and are more frequent in America than in this country This national difference in the type distribution of lobar pneumonia and the higher case mortality in America suggest a greater susceptibility among Americans, of whom the coloured people especially have a low resistance to the disease

Early diagnosis—The control and effective treatment of most infections depend on early diagnosis, and in this lobar pneumonia is no exception That it is not easy to recognise in its early stages is shown by the late average day of illness (third to fourth) of the cases admitted to hospital due mainly to the delay in development of unequivocal physical signs An early report of type I or II pneumococcus present in the sputum of an ill patient is practically diagnostic of lobar pneumonia The Neufeld method of direct typing from the sputum—i e , swelling of the pneumococcus capsule when the organism comes in contact with an antiserum of homologous type—can readily be learnt by doctor or technician (Cruickshank and Montgomery 1938), and suitable sera are now available for all thirty pneumococcus types (Lederle)

The results obtained from the direct typing of 207 specimens of sputum received in this laboratory during 1938 may be quoted as an example These specimens came from a variety of respiratory infections besides lobar pneumonia 72 per cent of the total were correctly typed by the Neufeld test, and this figure was raised to 90 per cent for the 125 specimens from which type I or II pneumococci were isolated

BRONCHOPNEUMONIA

Primary bronchopneumonia affects the very young and the very old and is probably in most cases an autogenous infection in persons with low resistance The pneumococcus is the infecting organism in some 90 per cent of the cases, although its causal relationship is less easily proved than in lobar pneumonia, for the infecting pneumococcus types in bronchopneumonia mostly correspond to those found in the upper respiratory tract of healthy people[2] However, various corroborative tests have shown that the pneumococcus isolated by throat swab—the most available method in the pneumonias of children—is the causal organism in 80–90 per cent of cases Recent work has indicated which, if more than one type is recovered, is likely to be the infecting strain (Andrews 1937)

The infection spreads as a rule along the mucosa from bronchi to bronchioles and alveolar tissue, hence a lobular distribution is the main feature Although typically both lungs are involved, a single lobe may be affected, with very little evidence of infection elsewhere and it may be impossible to say whether the disease is, pathologically, a lobar pneumonia or a bronchopneumonia Indeed although lobar pneumonia is a rare cause of death under 3 years of age, it probably occurs more frequently in young children than was formerly believed Bronchopneumonia is, however, the prevailing form of infection among infants, and both its incidence and severity of attack rapidly diminish with succeeding years The greater susceptibility in infancy seems to be due in part to a low general resistance and in part to the short wide bronchial tree, delicate mucosa and poor expulsive power of the child at this age The onset, often preceded by some minor respiratory infection, is more insidious than in lobar pneumonia, and dyspnœa and cyanosis are usually early and prominent Although the infection may end abruptly after six or seven days, more often the remittent fever continues for ten days or more and gradually settles by lysis Specific antibodies to the infecting pneumococcus are not present in the blood of the convalescent child (Gundel and Schaefer 1932), hence recovery must depend on non specific factors

Bronchopneumonia is more affected by environmental and climatic conditions than is lobar pneumonia, and such studies as those of van Loghem (1928) and Smith (1934) indicate that contagion plays little part in the incidence of those minor respiratory infections which are its usual precursors However, close contact, particularly in regard to sleeping accommodation, may lead to a spread of certain of the potentially pathogenic pneumococci—e g types III, VIII, and XIII (Cruickshank 1933b)—and therefore overcrowding may be expected to facilitate infection, given the other necessary factors Thus it may happen that two or more members of a household develop bronchopneumonia about the same time and due to the same type of pneumococcus, but that does not imply that the condition is infectious

THE NEWER REMEDIES FOR PNEUMONIA

Serum—The treatment of pneumonia with specific antipneumococcus serum has not become popular in this country The main obstacles to its more general use have been the need for bacteriological typing of the pneumococcus, the difficulty in deciding whether to give serum to a patient who is likely to recover without it or to withhold it when there is little chance of recovery the difficulty and possible dangers of intravenous medication, and the expense of the serum Most of these obstacles can be surmounted in hospital practice, but for the private patient a careful assessment of the pros and cons is probably needed The therapeutic value of the serum in certain type infections, particularly if given early, has not been seriously challenged A type I pneumonia in a patient between the ages of 20 and 40 seen within three days of onset is likely to be aborted by a total dosage of 40–80 000 units of concentrated serum (initial dose 20–40,000 units) at a cost in hospital of £2–£4 For type II infections, which are more severe, large doses of serum are required, and treatment of a patient over 40 years affected by either type I or II and already in his fourth day of illness is less likely to be successful In America, where large sums of money have been spent on encouraging the treatment of pneumonia with serum, the latest advances are the use of serum in some of the commoner of the "higher" type infections—e g types V, VII, VIII, and XIV—with apparently good results, the substitution of rabbit for horse therapeutic sera, and the extension of serum therapy at state expense to the smaller towns and hospitals and to private practice (Lord and Heffron 1938) The results obtained at four centres in this country (table II) have been presented in a report of the Therapeutic Trials Committee of the Medical Research Council (1934).

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[2] Pneumococcus types I, II, V, VII, XIV, and XXII seem to be the principal "epidemic" types they are usually associated with lobar pneumonia (types XIV and XXII particularly in children) and are rarely found in the throats of the healthy population except among intimate contacts of infected persons Types III, IV, VI, VIII, XIII, XVIII, XIX, and XXIII are perhaps the predominating saprophytic or potentially pathogenic pneumococci of these types IV, VI, XIX and XXIII are commoner in children and therefore are frequently isolated from cases of bronchopneumonia in the young types III, VIII and XVIII occur more often in adults and are associated with lobar pneumonia and bronchopneumonia particularly in older and debilitated persons

TABLE II—EFFECTS OF SERUM TREATMENT ON CASE-MORTALITY OF LOBAR PNEUMONIA

Pneumococcus	Age-group	Controls			Serum					
		Cases	Deaths	Mortality per cent	Cases	Deaths		Mortality per cent	Expected deaths*	
Type I	20–40	224	25	11·2	140	8	18	5·7	16	27
	40–60	77	20	26·0	44	10		22·7	11	
Type II	20–40	194	44	22·7	111	14	33	12·6	25	43
	40–60	111	38	34·2	53	19		35·8	18	

* The "expected deaths" are those which would have been recorded if the serum-treated groups had died at the same rates as the corresponding controls

Drugs—The treatment of pneumonia with 2-sulphanilyl-aminopyridine (M. & B 693, Dagenan, Sulfapyridine) is likely to supplant all other remedies, for, besides being relatively cheap and easy to give or take, it is probably effective against pneumococcal pneumonias of any serological type Its value was first demonstrated by Whitby (1938) in experimental infections in mice, and since then published and unpublished accounts have testified to its usefulness in the treatment of lobar pneumonia, although it is yet too early to say just how effective it is. All the reports so far published are lacking in one or other of the desiderata necessary for a critical judgment of the drug's efficacy—namely, an adequate series of cases of undoubted pneumonia; objective tests of severity, such as serological type, leucocytic response, or quantitative blood-culture; and significant mortality figures The available evidence, however, suggests that it both shortens the infection and saves lives and is particularly useful where serum is least effective—e g., in the older age-groups and in type III infections An adequate dosage is that recommended by Evans and Gaisford (1938)—namely, an initial dose of 2 g (4 tablets) followed by 1 g. every four hours for two or three days, and, if the temperature has fallen, by smaller doses for two or three days more. A tendency to recrudescence, if treatment is not continued beyond the time when the temperature returns to or near normal, has been evident in most reports. Even after the infection has apparently been aborted, the patient may still feel lethargic, and convalescence is apt to be protracted The most worrying effect of the drug is its liabilty to produce gastric upset, causing nausea, anorexia, and (in a fair proportion of cases) vomiting, with the result that the physician may be left in doubt whether to continue with the treatment and risk the ill effects of gastritis and interference with nourishment. Glucose by mouth may be helpful in such cases Although cyanosis appears in some cases, the blood examinations carried out by Evans and Gaisford (1938) do not suggest any toxic effects of the drug on the hæmopoietic system, but blood-counts should be done on all patients treated over a prolonged period It may well be that for the more severe infections a combination of serum and chemotherapy will be found most effective; it has more to recommend it (Fleming 1938, Loewenthal 1939) than has a combined drug and vaccine therapy as suggested by Maclea et al (1939)

There are very few published reports on the use of M. & B 693 in the bronchopneumonia of children, in which the drug might be expected to produce good results. Evans and Gaisford (1938) mentioned, without giving details, the treatment of 40 cases of bronchopneumonia in children, with only 2 deaths The tablets crushed up and given in milk did not cause any toxic effects The recommended dosage was as follows. for infants 1–3 months old ¼ tablet four-hourly, 6–12 months ½ tablet four hourly, the dose being gradually increased to 1 tablet four hourly for children aged 5. Thompson and Greenfield (1938) found that the administration of sulphanilamide diminished the incidence of secondary bronchopneumonia after measles and pertussis, and a still greater success may be expected, from the prophylactic use of M & B. 693, because it is effective against both pneumococcal and streptococcal infections.

CONTROL AND PREVENTION

From what has already been said it is obvious that the control and prevention of lobar pneumonia and bronchopneumonia call for different measures In both diseases early diagnosis is essential for saving lives by appropriate treatment

Lobar pneumonia—The control and prevention of lobar pneumonia in civilian life presents great difficulties, because the infectivity is low and the undetected carrier probably plays a large part in the spread of infection. Lobar pneumonia might be controlled better if it were more widely recognised as an infectious disease, so that appropriate precautionary measures, including the isolation of the patient at home or in a special hospital unit, could be applied. In particular, contact between the patient and susceptible persons—e g, those with colds or who are below par, the very young, and the very old—should be prevented Avoidance of chills, of extremes of heat and cold, of excessive fatigue, and of overcrowded and badly ventilated halls and cinemas is perhaps a counsel of perfection. It is unlikely that attempts to deal with persistent carriers of "epidemic" pneumococci would reduce the incidence of lobar pneumonia, but anyone who has once had the disease should be particularly careful to avoid predisposing causes, since he is more than ordinarily liable to a second attack. Measures for a more specific prevention of lobar pneumonia are indicated only where the congregation of many susceptibles is likely to lead to an epidemic For example, inoculation with a polyvalent vaccine of the prevalent pneumococcus types has long been a routine procedure in some of the South African mines, where the natives are particularly susceptible Unfortunately, although the records show that pneumonia due to the pneumococcal types included in the vaccine has diminished, the general incidence has not been greatly affected, because other types and other organisms have supplanted those against which protection was given (Ordman 1931, Orenstein 1931).

Immunisation against the prevalent types I, II, and III was tried with some success among American soldiers in 1917–18 (Cecil and Austin 1918)

A recent experiment in the immunisation of volunteers in the American Civilian Conservation Corps is interesting both for its large scale and for the use of a polysaccharide antigen instead of the crude bacterial bodies (Felton 1938). In preliminary tests some 32,000 men were inoculated, and in two later and more rigorously controlled experiments there were 70,000 men under observation, of whom over 20,000 were given a single injection of 1 mg each of a polysaccharide preparation of types I and II pneumococci An analysis of the results "suggests that the antigen may be effective in reducing the case-incidence of pneumonia" In one experiment the pneumonia-rate was 4 36 per 1000 years of life among the inoculated and 7 18 in the control group, the corresponding figures for the other experiment were 1 73 and 15 60 The immunisation seemed to be most effective in young adults and in those recently inoculated There was no effect on respiratory infections other than pneumonia

Bronchopneumonia —If bronchopneumonia is mostly an autogenous infection in persons of low resistance or living under conditions which lead to a lowered resistance, its prevention can only be achieved by remedying these defects, but it is easier to say what the remedies are than to apply them Obviously it is on the mortality among children under 5 years of age that an attack must be made, and the necessary measures—better nutrition and clothing, better housing with more fresh air and sunlight, regular habits, and proper parental care—are all part of the social and economic improvement which our Government is steadily encouraging That more is being done along these general lines in certain areas than in others is suggested by the infant death rates in different towns For example, although the rates are generally higher in the industrial north, owing principally to an excess of deaths from respiratory infections (measles, pertussis, bronchitis, pneumonia), a rate of 45 for Huddersfield is a challenge to similar towns to reduce theirs from a figure of 80–90 The reduction of the infant death rate to 50 or under would mean an annual saving of more than 4000 lives in the county boroughs alone Of more specific remedies, it has been pointed out by Ford (1934) that many of the recurrences of pneumonia in children are associated with infected tonsils and ears, and Mackay's (1931) work on iron deficiency in infants, causing an increased susceptibility to respiratory infections, probably indicates a useful prophylactic measure And again let it be emphasised that any steps for the prevention and control of measles, pertussis, and influenza will bring about a big reduction in the deaths from bronchopneumonia Luckily, as reference to the appropriate reviews in this series will show, advances in the prevention and control of these three infections are being made or are to be expected

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SPECIAL ARTICLES

MEDICINE AND THE LAW

Divorce for Insanity Information from Hospitals

When the Herbert Act allowed incurable insanity (with a five year period of continuous detention under care and treatment) to be a ground for divorce, it was plain that the courts would have to rely on evidence being made available by mental hospitals In the Divorce Court last week the President, while paying a tribute to the assistance given by the hospitals generally, remarked upon the "obstruction" offered by the authorities responsible for the Warlingham Park Hospital Counsel representing the Official Solicitor stated that no difficulty had been experienced where the Official Solicitor was concerned, but he had heard that other parties had not been so well treated Two days later an apology was offered to the President by counsel on behalf of the Croydon corporation and the Warlingham Park Hospital visiting committee He stated that the non appearance of a medical witness on the previous occasion was due to a chapter of accidents which culminated in the illness of the witness concerned The President explained that he had not complained merely of the absence of the medical officer, it was the failure to give assistance to litigants in the early stages of the case The incident ended satisfactorily in an assurance that the hospital would in future be guided by what his lordship had said The possible awkwardness of combining loyalty to the courts with loyalty to the patients, inherent in this rather difficult new law of divorce, seems, on the whole, to have been reasonably removed

Insanity and Desertion

There continue to be doubtful points for the Divorce Court to decide Early in April (in Bennett v Bennett) Mr Justice Bucknill had the case of a wife who deserted her husband in 1903 and was certified as insane in 1936 The Herbert Act allows divorce for desertion for at least three years immediately preceding the presentation of the petition The wife had deserted her husband for 31 years from 1903 onwards, but during the 18 months before the date of the petition, she was a certified patient in a mental hospital Had she, by those 31 years of desertion, put herself outside the pale of repentance? Desertion is a continuing offence When she decided to desert her husband, desertion presumably continued until she expressed a desire to return The judge held that her insanity raised the presumption that she was incapable of forming a reasoned judgment upon her relations with her husband When she was certified as insane, the burden of proof was placed on the husband to show that she retained a rational intention to desert him. The husband could not show this; it was a hard case, but divorce could be granted only on the terms enacted in the statute If insanity supervenes a week or even a day before the petition is presented, Mr. Justice Bucknill's ruling will apply and the necessary statutory period of three years' continuous desertion will be interrupted.

Detention under Care and Treatment

Another problem arose last week (in Green *v* Green) over the meaning of five years' continuous detention under care and treatment In the Shipman case the President had considered whether the occasional absence of a mental patient on parole for week-ends would be a fatal interruption of the statutory five-year period. He had held that, unless the absences were frequent, they need not be regarded as breaking the detention. He had now to consider the effect of absence for a fortnight at a time. The case concerned a patient of the Banstead Hospital who was sent to Whitstable for a fortnight on trial (under section 55 (1) of the Lunacy Act, 1890) to a house belonging to the Mental After-Care Association. The house was inspected and approved by the L C.C. for the reception of parties of patients released on trial. It was not a holiday home for other persons unconnected with mental institutions The parties were escorted to the house by an appropriate escort from the hospital; the persons in charge of the house were in constant communication with the hospital, and any lapse of conduct on the part of a patient would be at once reported to the hospital The President was satisfied that the Mental After-Care Association was acting as agents for the L C C. for a kind of absence where the element of discharge did not appear at all; the patients were in an atmosphere of greater liberty and less restraint, but they remained under the careful control and observation of the officers of the association acting as agents of the L C.C. The result was that this patient from Banstead was still subject to discipline and modified restraint during the fortnight's absence, and the court could properly hold that there had been no interruption of the detention. The President would, it seems, have taken a different view if the fortnight's absence had been simply a holiday.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

PELLAGRA

ACCORDING to Prof Tomescu the incidence of pellagra in Rumania is rising In a lecture to the Cluj Medical Society he recalled that Babes predicted forty years ago that pellagra would be stamped out when every peasant possessed enough land to produce his own foodstuffs Since then, owing to land reform and the expropriation of big estates, huge areas of land have been divided between the peasants, but this has not lessened the number of cases of pellagra The reason is that the general hygiene and economic and cultural state of the peasants are still very low; most of them live on maize, cabbage and potatoes, with wheaten bread and meat only on rare occasions The poultry and eggs that they produce are sold and never appear on their own tables In addition, their housing and clothing are inadequate and alcoholism is rampant

Prof. Tomescu suggests that the first step in a successful campaign against pellagra must be to raise the standard of living in the rural districts. Such measures have been successful in Italy, where pellagra was once much more prevalent than it is in Rumania.

A NEW HOSPITAL IN BUCHAREST

Jaques Elias, a Bucharest banker, who died in 1923, bequeathed 250 million lei to the Rumanian Academy of Science to erect and maintain a hospital The magnificent new hospital on the Bulevardul Marasesti has now been opened. It has 120 beds and in war-time its accommodation can be expanded to 400, but it will mainly cater for outpatients, the wards being intended primarily for observation and laboratory investigations The equipment is lavish and it is claimed that the physiotherapy department is unequalled in Europe. The hospital will be under the direction of Prof. Danielopolu

URIC ACID IN THE SALIVA

Dr. Joseph Kallós has suggested that estimation of the uric acid in the saliva gives a much better idea of the uric-acid production of the body than does examination of the blood or urine In 100 unselected subjects he found that the saliva uric acid was between 0 9 and 2 4 mg per 100 c cm in 12 cases, between 2 5 and 4 2 mg in 61 cases; and between 4 1 and 20 6 mg in 27 cases A value of over 4 mg before food is taken in the morning points to excessive uric-acid formation Kallós carried out repeated estimations in the same subject and has found that after the intake of foods containing purine bodies the figure may rise 1–7 per cent. He compared the uric-acid values in the saliva and in the urine and found that the former often shows a considerable rise while the latter is normal, and in such cases the clinical manifestations are in harmony with the findings in the saliva Similarly, a high value for the saliva uric acid was often associated with a normal figure in the blood

Kallós's method of estimating uric acid in the saliva is simple and takes only a few minutes Apart from its value in detecting a gouty tendency it may be used for determining the amount of uric acid formed after taking different kinds of food The saliva uric acid is first estimated with the stomach empty, the food to be tested is then taken, and the saliva is tested again two or three hours later.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

CONFERENCE OF STATE HEALTH OFFICERS

As usual the meetings of the state health officers with the officials of the Children's Bureau, the provincial health officers of Canada, and the surgeon general and officers of the U S. public health service, held from April 20 to 25, were an occasion for discussing the technical advances in the field of public health In addition they were concerned this year with the movement for extension of medical care at present crystallised in the Wagner National Health Bill and also with the possibility of general mobilisation that results from the danger of war

Discussions of the national health programme were disappointing The phobia of the American Medical Association in regard to health insurance was in evidence, and in general the state health officers showed a fearfulness and lack of imagination in the face of the undoubted popular demand for improved health services, which makes one wonder whether they have either the courage or ability to prom leadership in the broadened programme of national health on which this country is entering.

On the other hand encouraging progress was reported in the control of syphilis. State and local health departments have responded promptly to the increased federal grants for the control of venereal diseases, and during the first six months of the national campaign have provided more than $4,300,000 to match the federal appropriation. More than half a million new patients, it is estimated, will be brought under treatment for syphilis during the first year. There are now 1773 treatment centres reporting to the public health service through the state health departments, compared with 713 in 1936, and in the same period the doses of arsphenamine distributed by state health departments has increased from 1,321,000 to an estimated 3,750,000 in the present year. Laws requiring premarital examinations, including serological tests for syphilis, have now been passed in 18 states and 8 states now require serological tests on all expectant mothers.

Dr. K. E. Miller, who has been assigned to the Federal Trade Commission to advise them in regard to their new duties in the control of advertisements of foods, drugs and cosmetics, pointed out that until the Wheeler-Lea amendment was passed it was necessary for the commission, in order to sustain an action against false advertising, to prove (1) that there was injury to competition, and (2) that the correction of such injury was of interest to the public. Now, in the interest of the consumer, the commission may issue a cease-and-desist order where advertising is false not only in regard to what it says but also in regard to what it may fail to say. A product which contains a harmful drug and fails to carry in the advertising an appropriate warning is considered to be falsely advertised. The commission clearly intends to exercise serious restraint on this billion dollar industry and it is probable that this will result in an attempt to build up intra-state industries which, since their products will not cross state borders, will be immune from all federal control. For this reason Dr. Miller strongly urged that the states should enact similar legislation to protect themselves.

Encouraging reports were presented of the success of vaccination against yellow fever. In Rio de Janeiro more than a million have been vaccinated and the results as a whole have been excellent. Laboratories for the manufacture of yellow fever vaccine have been established in Colombia and are projected for other South American countries. It has been determined that the blood of the vaccinated persons does not contain virus in a form which can be transmitted by the aedes mosquito. It is said that the technique of the disinsectisation (horrible word!) of aircraft travelling between this country and the countries where yellow fever is endemic has been improved but not yet perfected, the problem being rendered more difficult by the adoption of ever larger types of aeroplanes.

Two dissimilar reports of health insurance in the British Empire were presented. Dr. Gregoire Amyot, assistant provincial health officer, British Columbia, spoke on the health insurance plan passed by the provincial legislature but at present inoperative because of opposition of the medical profession. He described the measure as dead but not buried. On the other hand Dr. C. E. Hercus, dean of the medical school at Dunedin, New Zealand, spoke of the very ambitious scheme introduced by the Labour government in that country. He said that there the profession had not been consulted before the introduction of the measure and as a whole had disapproved of it. But after the unequivocal results of a general election had made plain the popular demand they had agreed to coöperate in working it out.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE HOSPITAL SWEEPSTAKES

THE twenty-seventh draw of the Irish Hospitals Sweepstakes—that on the Derby—took place last week. The state of international tension naturally had a heavy influence on the sale of tickets, with the result that the receipts were the smallest since the first sweepstake. After expenses had been met, including the prize fund, a sum of £305,966 was available for the hospitals. The total amount that has been collected for the hospitals from the twenty-seven sweepstakes is £13,753,092, the largest sum from any one sweepstake being £779,899 from the Derby in 1932. If one may judge of the distribution of the sale of tickets from the destination of the prizes, the United States of America furnishes the highest number of purchasers. Of the 819 prizes, 403 went to that country, 224 to "Europe" (that is, European countries other than Ireland), 77 to Canada, and 59 to Ireland. It is understood that many of the Dublin hospitals are now busy with their plans for development, and that their proposals (though not as yet their individual plans) have received a general approval from the Minister for Local Government and Public Health. In the case of some of the hospitals which are bound by ancient charters or acts of Parliament legislation will be necessary, and it is expected that a bill for this purpose will shortly be introduced as a government measure.

PARIS

(FROM OUR OWN CORRESPONDENTS)

A NEW INSTITUTE FOR FUNCTIONAL RECUPERATION

For a long time M. Justin Godart, a former minister of public health, has cherished a scheme for putting functional recuperation on a material and institutional basis. Such an institution would be a centre at which general practitioners, the medical officers of insurance companies and industrial undertakings, the medical staff of the national health insurance organisation, and physical drill teachers could learn, on the spot or by correspondence, in theory and in practice, the scientific principles at the root of functional and professional rehabilitation. By his system of measuring the output of work, M. Godart has felt convinced he could put the studies of the proposed institute on a scientific basis. It has now materialised, and it was inaugurated at the end of March with much ceremony. Visitors to this institute must be prepared to undergo an energametric examination by one of its devotees.

ACTIONS FOR DAMAGES

A woman afflicted with warts on her hands sought relief from a doctor who ordered radiotherapy—two exposures, each of half an hour. The warts melted away like snow, but their place was taken by lesions resembling burns. Oxide of zinc was applied, but scarring ensued with paralysis of the left hand. After waiting three years in the growingly uncertain hope of recovery, the patient turned to her doctor for financial instead of medical relief, estimating the damage at 100,000 francs. Involved in her claim for compensation was not only the doctor, but also a nurse and the nursing-home. While the action for damages progressed at the speed proper to well-conducted legal proceedings, the patient was gathered to her fathers. But in due course her heirs were awarded 10,000 francs in posthumous recognition of the wrongs she had suffered.

In another lawsuit, subversive of the doctrine that dog does not eat dog, one doctor sued another for the disparaging comments made by him to a third party who happened to be the patient of the plaintiff. He was no less a person than Dr Raphaël Massart, one of the editors of *Concours Médical*. Practising medicine as well as medical journalism, he had occasion to treat a lady under the national health-insurance scheme. A certain Dr. X, employed as a medical inspector under the same scheme, visited the lady in question and made certain unfavourable comments on her doctor. Similar comments being repeated to the lady's husband, and a report thereof being made to Dr Massart, he felt constrained to bring an action for slander, and was successful therein to the tune of 1000 francs. Not heavy damages. Perhaps the court held that its assessment should be in keeping with the triviality of the defendant's remarks.

THE LANCET 100 YEARS AGO

May 25, 1839, p. 338.

From a leading article on the Registration Acts.

Although, in the words of Mr. Justice Best, "all the property in this country, or a large part of it, depends on registers," the parochial registers have been imperfectly kept, and negligently preserved by the Episcopalian Clergy. Transcripts were not made in many parishes; and when they were transmitted to the Diocesan Courts, they laid there, in "cold obstruction," unarranged, unindexed, and ready to fall to pieces. In a scientific and in a political point of view, too, the ecclesiastical registers were worthless, for they contained only a part of the births and deaths. The extent of the deficiency, though great, was unknown, but it differed in different counties, and the *cause of death* was not specified. The necessity of instituting an accurate civil registration of births, deaths, and marriage contracts, entirely independent of ecclesiastical ceremonies, had become inevitable and imperative; the high church party admitted this; and the Act for Registering Births, Deaths, and Marriages, introduced by Lord John Russell, passed both Houses of Parliament in 1836, and obtained the Royal assent. . . .

It will be evident that the system of Civil Registration is in every respect an immense improvement upon the Ecclesiastical Registry. Church ceremonies are no longer registered; and the birth, marriage contract, and death of every Englishman are recorded without any reference to the numberless differences of theological opinions which necessarily prevail among a speculative Protestant community. The cause of death is registered. Adequate means have been adopted to preserve the registers, and to render them easily accessible by means of proper indexes. A summary of the registered facts, which will accurately represent the state of public health, is to be laid before Parliament, and published every year.

". . . Few people, young or old, ask for more than an opportunity to make a living, to express themselves in creative effort, to live in peace. Surely a race which has learned how to crack the atom should be able to achieve these simple objectives. The important thing to remember is that the majority of our difficulties are man-made. They are not the result of penury of nature; nor are they visited upon us by a vindictive fate. They are the result of human carelessness, human short-sightedness, human greed."—Mr. Joseph Kennedy, speaking to the University Association of the University of Liverpool, on May 18.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

Opening the 149th session of the council on Tuesday last, Sir Norman Walker referred to the loss of Sir Robert Bolam, who had served on the council since 1920, first as a direct representative for England and then as the representative of the University of Durham. "He made no long speeches, but everything he said was worth listening to. As chairman of business he found himself in a very congenial post. His mind was orderly, and most of the improvements in standing orders in recent years emanated from his fertile brain." No-one, he added, could have wished a more loyal friend and counsellor. As his successor in the representation of Durham University the President welcomed Mr. Ronald Bramble Green, professor of anatomy and dean of the school of medicine. Two former members had also passed away, both of them representatives of the Society of Apothecaries. Sir Hugh Beevor from 1900 to 1910, and Lieut.-Colonel C. T. Samman from 1929 to 1932.

REGISTRATION AND FINANCE

The Medical Register for 1939 showed, said the President, that on Dec. 31, 1938, the number of names in the register was 61,420, an increase of 1257 on the preceding year. The new names included 330 added to the colonial or foreign lists of the register in 1938. The new method of compiling the Students Register only came into operation on Sept. 1, 1938, and the first register in the new form was, therefore, not due for publication until August. Coöperation from the deans of medical schools would make it more complete than it had been in the past.

He was glad to report the substantial surplus of income over expenditure for 1938 of £3433. "We cannot claim to be as eloquent as some of our predecessors, but we may claim to be more business-like." In 1891–1900 the average length of the two sessions of the year was 14·3 days, in 1901–10 12·[illegible], in 1911–20 9·8, and in 1921–30 9·5. In 1931–38 it was slightly over nine days; and for the last ten years the average surplus of income over expenditure had amounted to over £1300 a year. "Nothing has contributed so much to this satisfactory result as the readiness of the council of today to work overtime." Some of the duties imposed upon the council by the Medical Acts were expensive to discharge; that of maintaining and raising the standard of qualification was one of the most important. A new cycle of inspections of the final examinations was due to begin in 1940.

MEDICAL EDUCATION OVERSEAS

"At their meeting yesterday," the President continued, "the executive committee had before them a report by Prof. Stuart McDonald, whose authority to speak on questions of medical education is well known here, on an informal visit to the University of New Zealand which he paid early in the year in response to a cordial invitation from the authorities of the university. New Zealand, as I reminded you in November, 1937, took the lead in establishing reciprocal relations with us under Part II of the Act of 1886, which was applied to the dominion in 1887; and the degrees granted by the university have been recognised as being registrable here for over fifty years. The committee were, therefore, specially gratified, though not at all surprised, to read the favourable comments which Prof. McDonald found

ght to pass upon the courses of study and examina
ns after which the degrees are granted His
ort will be forwarded to the university with suit
e acknowledgments of the gracious reception
orded to him on all hands

'The committee also received memoranda by Sir
hard Needham on further visitations which he has
n so good as to make at their instance this year
he University of Hong Kong, the King Edward VII
lege of Medicine, Singapore, and the University of
ngoon, and a note on an informal visit which he
k occasion to pay in passing to the Ceylon Medical
lege (where he had made a visitation in 1936–37)
have learned to depend for accurate and up to date
ticulars of the curriculum through which diplomas
ognised by us are granted in each of these insti
ions upon the public spirited services of our visitor
would be premature for me to anticipate the
orts which he will make in due course on the two
versities and on the college in Singapore, but
ay go so far as to say at once that the committee
not likely to find in them any ground for sug
ting an interruption of the recognition which has
n accorded to the degrees granted by the Univer
of Hong Kong since 1913, and to the licence
nted by the College in Singapore since 1916

'The position in regard to degrees granted by the
iversity of Rangoon is not equally clear The
dical Council of India, who are entrusted with
wers to inspect courses of study and examinations
ler, or at least more specific, than those of the
neral Medical Council, had recognised these degrees
ortly before the separation of Burma from India
e executive committee, in the exercise of the
wers delegated to them by the council, have not
hheld recognition from any qualifications granted
universities in India which the Medical Council of
lia have recognised, and in November 1937,
ey recognised the degrees granted by the Univer-
y of Rangoon with effect from the date in 1936
which the degrees had been recognised in India
is decision was conveyed to the university with an
imation that recognition was accorded in the
rds of the Act, 'for the time being' and that its
ntinuance would be dependent upon the nature of
e report received by the committee from Sir Richard
edham on the visitation which has now been made
s, I think, already apparent from his memorandum
at this reservation was well advised Further
cussion of the special problems of medical educa
n in Burma must be undertaken in the light of
e report which will be made to the committee
fore it can be determined whether the degrees
fil the statutory condition prescribed for recog
ion, namely, that they furnish a sufficient
arantee of the possession of the requisite know
ge and skill for the efficient practice of medicine,
gery, and midwifery

"It has been my fortune to have had exceptional
portunities of observing medical education in other
ds, first in Austria Bohemia, and Germany, and
er in Canada and the United States of America,
which I went in a semi official capacity Also, as
missioner from the council, I twice visited, along
th Sir Richard Needham, all the medical colleges
d several of the much more numerous medical
hools, of India I am not going to make any
mparisons each country has methods and differ
ces of its own All, I think, realise that a sound
d broad general education should be the basis on
hich medical education should be built Our early
nutes show that our predecessors laid emphasis on
is point and advised that steps should be taken in that direction long before they were actually accomplished.

'The General Medical Council were constituted, as stated in the preamble to the Act of 1858, for the purpose of enabling the public to distinguish between qualified and unqualified practitioners, and Parliament thus laid on the council the duty of determining what a qualified practitioner should be No country has reached perfection, but no one whose name has been for over fifty years on the Medical Register will question that the practitioners placed on the register today are infinitely better qualified than those of his time

"In my address in November last I referred to certain impending problems in connexion with the working of Part II of the Medical Act, 1886, and indicated that it was important that proposals for the alteration of any local law relating to medical practice in dominions or parts of dominions with which we have reciprocal relations should be communicated to us before legislative effect was given to them This suggestion was made too late, for we learnt shortly afterwards that legislation had been passed both in New South Wales and in Victoria which appeared to prejudice the continuance of the application of Part II of the Act to these states I caused this information and a summary of the effect of the new acts to be circulated to all the licensing bodies in this country, and asked them to give careful consideration to the position Replies were received from the majority of the bodies, and in February were laid before the executive committee The committee authorised me to communicate with the Dominions Office, and, after very full consideration of the whole matter, letters have been sent on behalf of the committee to the medical boards of New South Wales and of Victoria, and to the Universities of Sydney and of Melbourne, directing their attention to difficulties likely to arise

"I believe that the origin of such difficulties may be found in endeavours to deal with the immigration into the dominions of medical practitioners who are not British subjects by means of legislation which purports to regulate the local conditions of medical practice The General Medical Council have recently had occasion, especially in dealing with the registration of foreign dentists under the Dentists Act, 1878, to realise more clearly than ever that their concern is with standards of professional education, and not with political questions; and I venture to suggest that medical boards or councils elsewhere who are responsible for medical registration tread on hazardous ground when they seek, by means of amendments of Medical Acts, to deal with matters which obviously fall within the general province of the government of the country"

A vote of thanks to the President for his address was moved by Mr W L Miles, seconded by Sir George Newman and carried

Prof J S B Stopford was elected chairman of business in place of the late Sir Robert Bolam Mr R B Green, representative of the University of Durham for five years, was introduced by Prof Stopford

The council then passed to the consideration of disciplinary cases

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BRITISH INSTITUTE OF PHILOSOPHY —On Wednesday, June 7, at 5 45 P M at University College, Gower Street, London, W C.1 Sir Sarvepalli Radhakrishnan will deliver the Iver lecture He will speak on the nature of truth Cards of admission can be had from the director of studies at University Hall, 14 Gordon Square W C 1

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM AN AMATEUR JOURNALIST

IV

ACCORDING to the editor of a certain standard dictionary, well-bred persons of education and fair ability are able to define or understand 50,000 words, and are accustomed to employ some 20,000 or more in conversation and writing. It cannot be an easy matter, even if it is possible at all, to ascertain the extent of anybody's vocabulary, excluding of course the extreme limit in a little child, a mentally defective or an entirely uneducated person. But I should have thought such figures as those advanced by the editor a grotesque overstatement I have seen it stated, on reasonably good authority, that Shakspere used 24,000 words, Milton about 13,000, although both knew many more. It has also been estimated that the average labourer from Dorset—why Dorset ?—gets along with 300 words and I find it easier to think in such simple figures than in the tens of thousands which the editor of that standard dictionary flings about so lavishly. "Drugs are of no use" has been remarked on occasion, evoking the retort "not the slightest unless you know how to use them." To some extent the same may be said of words, although the attempt to acquire a large vocabulary must be on the whole the index of a desire to know the proper meaning of the words and, therefore, their correct and advantageous employment.

* * *

If one may judge from ordinary conversation, is it likely that the average "well bred person of education" knows the meaning of more than 8000 words and uses more than 5000, excluding of course purely technical terms ? Every advance in knowledge means an appropriate new vocabulary so that daily accretions to our language are demanded. Every profession, every trade, every invention has its technicalities, often a language which to the uninformed is completely meaningless Surely our own profession must have easily the most extensive of all technical phraseologies. Dictionaries of medical terms claim to contain something of the order of 80,000 references What percentage of this stupendous total is utilised by the majority of our profession ? Dip into it for some choice examples: hysterostomatocleisis; anakinetomeric; onomatopoiesis; maieusiophobia; hyperneurotization; autarcesiology; tsutsugamushiasis; synchopexia One learns with relief that the last is "the same as tachycardia" In the preface to the 18th edition of Dorland's American Illustrated Medical Dictionary (1938) it is claimed that 3000 new words have been added since the previous edition (1935): 3000 in three years; nearly three a day! No wonder that some of us who would doubtless be convicted of an inferiority sense are afraid to go away for a week-end lest during our absence we shall lose some advance in medicine which we shall be unable to overtake.

* * *

In this connexion it is natural to consider the employment of proper names in medicine Whilst a relatively small number are an integral part of our knowledge and could not possibly be eliminated, it is not remarkable that a protest is raised from time to time when a fresh sign or syndrome, a new test, a special instrument, a modification of an operation or variation in some form of treatment impose an additional burden on the memory. Blanchard scathingly described the "syndrôme du baptême" as a neurosis with the absolutely characteristic symptom that the victim—usually a medical practitioner—is seized with an uncontrollable impulse to discover some extraordinary disease and to bestow his name upon it And to this neurosis a not inconsiderable number of our profession display a high degree of susceptibility and morbidity. To the *Annals of Medical History* for January, 1937, Sir Humphry Rolleston contributes a fascinating article on the subject of eponyms, a comprehensive survey with all the charm and learning we expect from his pen. He quotes the number of eponymous terms in Dorland. if *one includes every reference to which a proper name is attached the number must run into thousands* I counted 776 under "signs" alone! Sir Humphry defends the eponym on certain grounds Subsequent research may show that the exact nature and causation as originally denoted are incorrect; so that "Gull's disease" is preferable to "myxœdema" and "Cushing's syndrome" to "pituitary basophilism." Again, the pathological description may be inconveniently cumbrous Compare "Raynaud's *disease*" with "*local* asphyxia and symmetrical gangrene of the extremities"

Drawbacks are in many instances obvious. Mostly the reference is, to say the least of it, meaningless. Priority of description is not *ensured* with any certainty Sir Humphry points out that the Stokes-Adams form of heart-block was reported by three previous observers and it is not surprising that the same condition is claimed by many *different* countries and identified by a corresponding name Everybody in the profession in the British Isles is familiar with "Graves's disease" although there may be some doubt whether it should be Grave or Graves A lesser number recognise "Parry's disease" and are aware that on the Continent toxic goitre is invariably identified with K. A von Basedow I wonder how many know that in Italy they describe it as "Flajani's disease" and I judge that only the most erudite (to whom such a study almost smacks of an obsession) would be familiar with the claims of Stokes, Demours, Marsh, Parsons and Begbie in the same connexion Argyll Robertson, Cheyne-Stokes, Austin Flint Brown-Séquard, Stokes-Adams are hallowed names, although an impish examiner can generally score off a student by inquiring whether one observer or two are intended. *I have myself* encountered the belief that a possible occupation-disease was designated by "Baker's cyst" and that "Parrot's nodes" derived recognition from resemblance to the beak of a bird. ("Writer's cramp" is perhaps too thoroughly established to justify the attempt to fasten upon an unsuspecting victim the acceptance of a possible eponym in "Scrivener's palsy") I confess to a resentment in encouraging a flippancy when accepting "Jones's cock-up splint" and "Cock's peculiar tumour"; but too much of our scientific nomenclature has received the cachet of antiquity to assume as the avoidance of an invidious distinction the well-known recommendation of the late Lord Fisher.

The out and out pedant is admittedly a nuisance. If he desires to talk like a book he will begin by being distrusted and end by being thoroughly detested. The man who uses the expression "our mutual friend," which was good enough for Dickens, is likely to be annoyed rather than grateful or even interested if he is informed that the construction is nonsense. To speak and write fairly good English is a not over-laborious occupation; to speak and to write what the pundits would accept as correct English seems to demand a nightmare of study. There are books on the subject; one which is at my elbow has 21 pages occupied with rules for the correct use of "shall" and "will." Twenty-one pages of complicated instruction and examples for an even chance! You are as likely to be correct by guessing. Did anybody ever write perfect English? It is not difficult to pick holes in Carlyle and Macaulay, to say nothing of Scott and Meredith.

Apart from the condemnation of preciosity, a word is pertinent in regard to the abuse of slang. I say abuse, not use, because an occasional indulgence is a not too generous concession to gregariousness and to have no slang at all is as bad as to have no redeeming vice. Recruits to our language hail from every section of society and the smart expressions of one class are the slang contributions of another. Some are transferred from such exalted quarters that we average beings are dazzled into admiration and forget the unworthiness of their origin. But abuse introduces the dangers of slovenliness and inexactitude—dangers only too prevalent in our profession, in which the habitual slang addict will never lack for company, in which indeed the stylist or purist is likely to gain more ridicule than respect. I was a dresser to a famous surgeon of his day and early in the course of my duties I informed him in the affable manner of one brother of the lancet to another that such and such a specimen had been sent to the "path lab." "The path o log i cal lab or a tory," he corrected, with unctuous and punctilious demarcation and would be devastating reproach. The lesson was not forgotten. Two years later, when his house-surgeon, I thoroughly drilled my dressers so that when the great man asked one of them colloquially "Anything in the chest, anything in the lungs?" he was staggered into inarticulate fury by the quiet rejoinder "The usual thoracic viscera, sir, and air in the lungs."

The cultured layman learned in the classics is contemptuous of the whole of our phraseology, many terms in which are a mixture of Latin and Greek with elements which long ago parted company from their original meaning. Even if we have to offend him we have no remedy; we have to accept our current language. But much of our slang is lamentable, although it may survive with the defence that it saves time and trouble and is generally (not always) unambiguous. Nobody, for example, ought to worry about the distinction between an "infrequent" and a "slow" pulse, for although there is a difference it is only a man intoxicated with the madness of superlative accuracy who would desire to advance it. And to some extent the same may be said about the familiar pronouncement that the patient has "no temperature." We always know what is meant and do not need reminding of the absurdity that his temperature cannot be absolute zero. Still, it is a pleasing little courtesy to the ears of the more particular to announce the absence of pyrexia or fever. But much of our medical gibberish is unnecessarily inelegant. Life may be short and art fleeting, but neither to such an extent that we need flu, gynæ, primip, abdo, pul tub, auric fib, chronic appendix, gastric case, pronounced belly, a cardiac, teeth O K, he was bismuth mealed, Babinski present, I put her on iron, she had a Cæsar, I did a P R. Odd tenths of seconds saved, but what are you going to do with those tenths?

As a really good New Year resolution (which could be adopted in May) we all ought to eliminate the verb "to get" as much as possible. Consider this ugliness from a leader in our midst—of course the context is paraphrased: "In this condition you do not get perfect expansion, you get irregularities and you are apt to get a tendency to bronchitis which in the course of time gets worse." This shows the perpetuity of the early habit in a student's training, for when one asks for the description of a lesion, in the huge majority of cases the construction proceeds upon the lines—"You get." I may resent the imputation when he is referring to hobnails in the liver or reject the absurdity if he assures me that "you get hæmorrhage from the vagina." "You get" serves all purposes—as for "one observes (or finds)" or "there is present (or occurs or develops)." In fact there exists a host of appropriate choices from our rich vocabulary which like verbal misers we keep hoarded up between the boards of dictionaries, content to subsist on a battered or counterfeit phraseology.

* * *

And the delight in abbreviations! Perhaps we are as a nation peculiar in a penchant for multiplying and utilising the letters which its citizens are permitted to adopt as indicative of the distinctions and honours that they have gained or acquired. A high court judge has sardonically pointed out that the payment of a few guineas appeared to be the only qualification for election to the fellowship of certain societies with the privilege of putting a number of letters after one's name. In some instances, I suppose, the qualification is even more slender than that. How many people know what an M B I P S is? Most are familiar with I.O U, but I O P has an entirely different significance. Beware lest your friend with the last named distinction is inadvertently addressed as I O O P. So far as I can see there is nothing to prevent one from starting a society of any kind, say "The Metropolitan Association for Encouraging Ambidexterity in Midwives" and associating with this, fellowship, membership, associateship, with corresponding letters to follow the name.

What must the layman make of our honourable professional adornments? He has to discover that a bachelor of surgery may be a B C, a B Ch, a B Chir, or a B S. The last he probably confuses with B Sc, the second must puzzle him because of its clerical appearance and the first he probably refuses to believe. What does he think of us when we call most of our doctors of medicine M D s but a select few D M s? Don't we know our own minds? M R C S, L R C P he encounters so frequently that he masters their significance, and to F R C S he accords a respectful recognition of superiority. But what does he make of L M S S A, of L R F P S, of M M S A? I am not at all sure that the majority of us would be confident in respect to B A O, L A H, L S Sc. In our jargon we have a kind of recognised notation: P R, W R, H S, H P, R M O, Tb or T B, T A B, K L B, C O A, pH, F H, B B A, L O A, P O P and a host of others. There may not be much danger of confusion although I found that of two consecutive students selecting the abbreviation P A one meant pernicious anæmia

(Continued at foot of next page)

LETTERS TO THE EDITOR

THE PSYCHOLOGIST IN WAR-TIME

SIR,—Your leading article last week ignores the experience gained during the Great War in the treatment of the gross hysterical disorders, which were grouped together under the misleading title of "shell shock" and formed a large majority of the war neuroses There is no doubt that similar disorders will occur in any future war, not only among soldiers but also among the civilian population as a result of air-raids. It was not until the third year of war that really satisfactory methods of dealing with the war neuroses were discovered Even in 1916 some of the war neuroses were still regarded by many as organic in nature, and it was not until the following year that their true nature and proper treatment became widely, though still far from universally, recognised.

The treatment consisted in simple explanation, persuasion and re-education, sometimes reinforced by suggestion with or without hypnosis, though all forms of suggestion were generally discarded as the medical officer became more experienced In almost every case of hysterical paralysis, contracture, tremor, blindness, deafness, mutism, aphasia and vomiting, whether recent or of many months' or even two or three years' duration, complete recovery followed a single treatment, which might last anything between five minutes and two or three hours When the treatment was carried out at a casualty-clearing station many soldiers were able to return at once to the front line. Those treated in England were soon fit enough to return to duty at home or to civilian life, and there were very rarely any residual nervous symptoms requiring further treatment. Successful application of these rapid methods of psychotherapy did not depend upon any special psychological or neurological training of the medical officers Of the ten who worked with me at the Seale Hayne Military Hospital, with its 300 beds for functional nervous disorders, only one had had any previous training; yet all became highly efficient within a week of joining the staff Large numbers of British, Dominion and American medical officers came for fortnightly courses of instruction, which proved amply sufficient for learning the technique of the simple methods of psychotherapy required for the war neuroses

Modern methods of psychotherapy, which generally entail prolonged treatment, would be quite useless for the treatment of hysteria under war conditions, when it is essential to get very rapid results The anxiety neuroses, which are of course common enough in war-time, require quite different treatment, and no doubt the well-trained psychotherapist is the right man to deal with the severer forms of these, although any intelligent doctor is quite competent to treat the minor forms In providing for the treatment psychological disorders in war-time the services of those who gained experience during the Great W should be utilised, and the training of the you psychotherapist should include instruction in th methods which were found so successful twen years ago, even if the views upon which they we founded are regarded by modern standards as be old-fashioned, for they certainly were extrem successful I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, May 22

EQUIPMENT OF INDUSTRIAL CLINICS

SIR,—In answer to Dr. Stewart's letter in your l issue I should like to explain that the actual wo used in my address were: "As a preventive mea all large factories should have on their staff a med officer with adequate facilities, including X-r facilities" With the first part of this stateme Dr Stewart agrees; and he will, I feel sure, agr also that, where the possibility of pulmonary di in dusty trades is concerned, X-ray investigation the chest must necessarily be included among t facilities Where a specific occupational lung haz is concerned it would obviously prove an econom proposition to have such facilities on the sp I quite recognise, however, that every factory engag in a dusty trade cannot have X-ray apparatus on t premises Such a question is purely a matter for t individual factory management

Dr Stewart concedes that the industrial med officer has a part in the prevention and detection lung tuberculosis in industry, and he approve the policy of extension of medical services in t factory. I hold the view that the medical officer such cases has adequate facilities, including the X-ray examination, if he is able to refer his case chest clinics and hospitals in close proximity to t factory. Dr Stewart and I are, therefore, I fe substantial agreement.

I am, Sir, yours faithfully,

Weymouth Street, W 1, May 22 PHILIP ELLMA

INSULIN SHOCK AND CONVULSION THERAPY IN THE TROPICS

SIR,—The observations by Dr. Hoff and Dr S (April 8) on my paper on shock therapy in Ind patients (March 4) require a reply.

They say that "the climatic conditions of t south of Iraq are not very different from those India" But India is a continent, and it is m appropriate to speak of parts of India rather th the whole Iraq is probably comparable to part northern India The experiences I recorded r only to patients in South India, which has a temperature all the year round, and is not su to the extremes of the north. The diet of S Indians, which is largely vegetarian, is inadeq and non-nutritious They are small, spare, un nourished and weak; they are also emotional restless, and have a high average intelligence W such a background, hyperactivity is more com than retardation or depression; it is manifest e as a meaningless excitement, a maniacal exalta or as delirium This tendency to hyperactivity w commented upon by Dr. Mapother, when he v the Bangalore Mental Hospital in January o year. Very often the patients on admission

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(Continued from previous page)

and the other paralysis agitans. Trouble may arise because of the use of a special notation which has a purely local significance. I was once puzzled to identify the artistic glorification of a young man described to me as an R A. until I discovered this stood for resident anæsthetist, and the I M A, which I had perhaps naturally supposed to indicate an intern midwifery assistant, turned out to be a master of engineering—Magister in Arte Ingeniaria.

Next month "Peter Quince" will be responsible for these columns.

found to be dehydrated and exhausted, and it is a standing order that, unless there is a definite contraindication, they shall be given a litre of intravenous saline and saline and glucose daily for the first few days In such patients one has to go slow with any form of shock therapy More than two injections of Cardiazol per week are neither necessary nor advisable Mental deterioration is correlated with frequency in fits, and by inducing frequent convulsions in mental patients *we are merely hastening a dementia*

As regards insulin shock we suffer from several disabilities in India Owing to the present lack of a drugs act one is never sure of the strength of the insulin received Small doses have been found to improve the general health, but for shock therapy large doses are necessary and with our patients uniform results are not produced The mental disorder itself causes imperfect regulation of blood sugar and the variations are erratic in half starved dehydrated hyperactive patients It has been found that a patient who reacts with hypoglycæmia to, say, 30 units one day does not react to even 60 units the next day, but reacts to 15 units on the third And since the shock does not follow the injections immediately, as does the cardiazol convulsion, it is not always easy to regulate the dosage Several of my patients have developed hypoglycæmia not an hour or two after the injection, as is usual, but many hours later, during the night and during sleep, insulin having been administered in the morning So although insulin shock has proved of undoubted benefit in some cases, we have been compelled to restrict ourselves to relatively safer treatment Where every other form of therapy has been tried without benefit, and the clinical and economic conditions justify any risk, insulin may be tried

I am, Sir, yours faithfully,

M V GOVINDASWAMY

Bangalore, May 11

SHORTAGE OF NURSES

SIR,—After an experience of over fifty years on the resident and visiting staff of London and county hospitals, I am convinced that the greatest gain to nursing, and the right way to meet shortage of nurses, would be that in all hospitals women and children should be nursed by women, while men and big boys should be nursed by men In 1887–89 I was resident in a county general hospital where male nurses were employed for male patients, and the four years of the Great War confirmed my belief that men are best nursed by men Each sex should carry its own responsibilities, and no one can gainsay that there is just as good nursing capacity in a "he" as there is in a "she" *Nursing is the first line of* assault against disease it is up to the medical profession to see that this line does *not fail for* lack *of numbers* There is no more reason for a woman to nurse a man than for a man to nurse a woman If even one hospital could be induced to give my plan a trial, I am confident a follow on in a large scale would relieve the present scarcity of candidates for nursing

I am, Sir, yours faithfully,

W BULHOUCH COSENS

Worthing May 22

*** Last week the matron of the Leicester City General Hospital told the Leicester County Nursing Association that male nurses are now being trained both at her own hospital and at the Leicester Royal Infirmary (*Leicester Mail*, May 20) Their training, she said, is the same as for women probationers, but they are not resident —ED L.

WOMEN ON THE G.M.C

SIR,—The Medical Women's Federation have, *during a number of years*, given considerable thought to the question of the representation of medical women on the General Medical Council There are *now more than 6000 women* on the Medical Register, and it seems to the federation extremely desirable, and indeed only equitable, that medical women should be represented on the body responsible for the administration of the Medical Acts which affect the profession as a whole As students, women follow the same curriculum as men, as practitioners, they are subject to the same rules of professional conduct, and they may equally become involved in disciplinary cases Further, many women come before the council as witnesses in penal cases, and the federation hold the view that it would be advantageous if the evidence were weighed by women doctors as well as by men

The present constitution of the General Medical Council makes it extremely difficult for a woman to become a member It is unlikely that universities or examining bodies would select a woman as their single representative, nor is it probable at present that the Privy Council would advise the King to nominate a woman doctor The only way in which medical women can hope to secure representation is by election as one of the seven practitioners chosen by the whole profession in England and Wales Two elections for such places are due to occur at the end of the present year, and therefore the federation desire to remind the profession of the claims of women to a place on the council

I am, Sir, yours faithfully,

JANET M CAMPBELL

Hon Secretary, Medical Women's Federation,
9 Clifford Street, London W 1

May 22

SEX-INCIDENCE OF CANCER

SIR,—Sir Arthur Hurst's article on cancer of the alimentary tract published in your issue of March 11 develops a theory of cancer causation and supports it with statistical matter I venture to suggest however that the statistical methods used are open to question

In his paragraph on sex incidence Sir Arthur, touching on his theory of extrinsic and intrinsic factors in carcinogenesis, quotes the deaths from gastric cancer expressed as a percentage of those "who developed cancer in 1935" He holds that males and females have an equal susceptibility to the intrinsic carcinogenic factor and that while the extrinsic factor for gastric cancer may vary in different countries, it is roughly the same for both sexes in any one country Hence the gastric cancer mortality should be the same, but his figures are 22 5 per cent males and 16 6 per cent females (1935) This discrepancy he explains by suggesting that a considerable part of the female cancer susceptible population is carried off by cancers of the breast and uterus at an age period (45–55) earlier than that at which gastric cancer is commonest (60–70) The extrinsic factors have therefore insufficient time to act Accordingly, by a simple calculation, he adjusts the figure 16 6 per cent to 24 0 per cent by making an allowance for those females who, had they survived, would have developed gastric cancer

This letter asks Sir Arthur to justify a calculation, to an accuracy of 1 in a 1000 made in accordance with a theory which he seeks to support with those same figures The problem becomes clearer if instead of taking a percentage on an indeterminate base (since no-one knows at what date cancer first develops, nor is it notifiable when diagnosed), we take deaths from gastric cancer by age-groups (the figures in parentheses give the death-rate per million estimated population 1930):—

ENGLAND AND WALES: DEATHS FROM CANCER OF THE STOMACH

Registrar-General's Annual Statistical Survey, Part I, 1930

Ages	0–	15–	25–	35–	45–	55–	65–	75–
M	0 (0)	8 (2)	65 (20)	301 (116)	999 (434)	1849 (973)	2114 (1922)	820 (2050)
				(per million living)				
F	0 (0)	4 (1)	62 (18)	244 (81)	686 (254)	1249 (595)	1859 (1430)	1137 (1862)
				(per million living)				

All ages standardised { Males = 233 7 per million
Females = 162 8 „

Can Sir Arthur explain how the substantially lower female rate at all ages accords with his theory? Would he make it clear how his figure of 24 9 per cent was calculated and how he would apply the correction to the age-groups shown above?

I am, Sir, yours faithfully,
BARON RUSSELL.

Derby, May 19

BLOOD AND VULCANITE

SIR,—Last year I was appalled by the number of edentulous or badly septic mouths seen during six months spent in the hospitals of London My impression was that dental conditions in Canada were far better than in Great Britain Hence Dr Leslie Cole's letter in your issue of April 29 interested me To test my impression I have examined the mouths of 20 consecutive patients under forty admitted to the general surgical wards of the Royal Victoria Hospital Using Dr. Cole's classification the results are as follows (Dr Cole's figures in parentheses):

	Patients	
No teeth, dentures upper and lower	0	(4)
No teeth in upper or lower jaw, one complete set of dentures upper or lower	1	(7)
Gross dental sepsis, few extractions and no dentures	4	(1)
Some teeth in both upper and lower jaws and efficient dentures	0	(1)
Efficient without dentures and no gross dental sepsis	15	(7)

I pass on these results without comment, except to note that in this country, even among the hospital class, there is a far greater consumption of milk, fresh fruits and fresh vegetables.

I am, Sir, yours faithfully,
ALLEN TEMPLE.

Royal Victoria Hospital, Montreal, May 10

CLINICAL SENSE AND CLINICAL SCIENCE

SIR,—In view of Prof. Ryle's remarks on the "clinical sense" I offer the following correspondence without comment

1. *Letter presented by patient at hospital*—"This patient has been having injections of anahæmin 2 c.cm. and it is recommended that she should continue with them."

2. *Letter from hospital pathologist to the doctor.*—"This patient has given me your letter recommending injections of anahæmin. I should be obliged if you could let me have some further information in regard to her. I presume the injections were given for pernicious anæmia. If so could you kindly let me have details as to the data on which the diagnosis was made."

3 *Reply from doctor.*—"Thank you for your letter of yesterday about the above-named She was admitted to the convalescent side of the —— Hospital and was there for three weeks. She was obvious pernicious anæmia (clinically). As we h no pathological department no blood-counts we made. She received five injections of anahæmin the three weeks and showed considerable improvement."

4. *Reply from the pathologist*—"The blood of th patient shows Hb 25 per cent. with red cells 3,480,00 per c.mm., giving a colour-index of 0 35. Mean di meter of red cells 7 mμ. This is very evidently the picture of pernicious anæmia I think that th benefit which the patient derived from her stay —— Hospital must be attributed to the rest rath than to the anahæmin. She is suffering from a gr degree of mitral stenosis."

I enclose my card herewith but for obvious rea request you to permit me to sign myself

May 20. C(L)YNICU

MEDICINE STAMP DUTIES

SIR,—It cannot be the intention of the Chancel of the Exchequer that the repeal of the Medici Stamp Duties and the patent medicine vendor licence should be prejudicial to the health of th community It is just as clear, however, that th removal of all restrictions from the sale of medicine excepting the small proportion of them which conta listed poisons, and the withdrawal of that encouragement which the earlier legislation gave to the pr prietary medicine manufacturers to disclose th composition of their preparations may be followed (1) a large addition to the number of vendors, alrea largely in excess of public need, (2) the use of machines for the delivery of packed medicines, a (3) a cessation of the practice of disclosing formul Cannot some corrective be devised for the evils wh are likely to follow the repeal? Perhaps the Chancell could give a hint to the Home Secretary to use th powers which he has under the Pharmacy and Poi Act to make additions to the Poisons List and th give the public some new safeguards as an off against the removal of the old ones

I am, Sir, yours faithfully,
GALE

May 19

". . . In most parts of the animal kingdom th absence of the competition of natural selection seem have disastrous effects on the qualities of the anima The fauna of oceanic islands do not seem capable competing with later importations from continents Th lizards of the Galapagos are being killed out by the co petition of pigs and goats, and the marsupials of Austra have been beaten by the rabbits Even as to those rabb I would venture the guess that the absence of the norm struggle for life during a century, as indicated by th rapid multiplication, has led to degeneration, so that Australian rabbit, if brought back to England, w have little chance in the competition with its unim ported cousins Have we any right to think that huma can escape the same tendency? I believe that inve gations carried out under the auspices of this societ the same trend even during the very short period which data can be obtained. If then civilization is the c dition in which natural selection is inoperative humanity, it must inevitably lead to degeneration, w for men means decay of the intellect, and such d must surely lead to a collapse of the civilization principal aim of all of us, whether eugenists or n I suppose to maintain or improve our present stat But there is a more important need for a eugenic p even than this, for something drastic must be don to keep up to our present condition We shall ha run rather fast even to stay where we are, and faster if we want to get anywhere further on DARWIN, F.R S, Galton lecture to the Eugenics S *Eugenics Review*, April, 1939, p. 14.

OBITUARY

CHARLES HERBERT FAGGE

M S LOND , F R C S , HON F R A.C S

By the death of Mr Fagge in Nuffield House on May 10 at the age of 66, Guy's Hospital loses a valued member of its consulting staff, and British surgery *one of its leaders*

Charles Herbert Fagge was born in 1873, the second son of the late Dr Herbert William Fagge of Lutterworth The family have a long association with medicine and with Guy's, Fagge's father having been a student there, his uncle Charles Hilton Fagge a physician, and his great uncle John Hilton one of the hospital's most famous surgeons It was natural therefore that he should follow his elder brother to his father's hospital, and his career was from the first distinguished In 1895 he gained the gold medal and exhibition in anatomy in the University of London, and two years later he graduated with a gold medal and exhibition in medicine, and a gold medal and moiety of the exhibition in surgery In 1898 he obtained the mastership in surgery at the university and the fellowship of the Royal College of Surgeons of England

After this Fagge held a number of junior posts at the hospital, two of which may be cited as having influenced particularly his future career As editor of the *Guy's Hospital Gazette* he held a position which, though unconnected with the medical school, is one of considerable importance , the *Gazette* has a circulation and a function beyond that of a hospital journal, and the editor has a responsibility that is rarely interfered with The second influence at this period was his long connexion with the anatomical department first as assistant demonstrator and then as senior demonstrator—a post which involved the whole teaching of anatomy and embraced duties now performed by a whole time anatomist holding a university appointment Throughout his subsequent career Fagge kept his anatomical outlook It was rumoured that he never went to bed without reading ten pages of Cunningham, and whether or not this be true, he was able in his ward rounds to discuss in detail the anatomical aspects of any case, and took a delight in confounding those with recent anatomical honours over some point of detail Later he was for many years an examiner in anatomy at the Royal College of Surgeons, and his "Pocket Anatomy" went through nine editions

When Fagge was appointed assistant surgeon to Guy's, he was also put in charge of the ear department and with characteristic thoroughness he prepared himself for this work by postgraduate study at Berlin and Vienna and by working as clinical assistant at the Royal Ear Hospital Soho Square He conducted this department with great efficiency but never became particularly attracted to the subject, and did not after relinquishing the appointment in 1909 retain his connexion with otology His senior colleague was Arbuthnot Lane, then making his anatomical researches on the skeleton, at the back of his house in St Thomas's Street, and working at those ideas that afterwards made him one of the pioneers of aseptic surgery, the best craftsman of a generation, and the founder of modern orthopædic technique Fagge was to Lane more than a junior colleague With a loyalty that was one of his most characteristic traits he threw himself heart and soul into Lane's work, and for many years the two collaborated with a harmony and unity of aim that is seldom seen This association coloured Fagge's surgical outlook probably more than anything else, and accounted for his particular interest in the somewhat opposed subjects of the surgery of the skeleton and major abdominal surgery It made him also a gentle and careful operator, attentive to every technical detail , and because he never allowed his standard to lapse, but would always expound his actions, however long the case and however tired he might be he was for many years sought by the best students for the appointment of dresser

(Elliott & Fry

Fagge was also a magnificent teacher of surgery, and stood out among his contemporaries by the scholarly nature of his expositions Surgery was his passion and he worked constantly at it, learning not alone by reading but by contact with surgeons from other centres on the court of examiners of the college, on the council of the Association of Surgeons (of which he later became president) and on the editorial board of the *British Journal of Surgery* Few who attended his rounds will forget his accurate phrasing and varied approach—sometimes through a discussion of contemporary British and foreign literature, sometimes through his own clinical experience, and sometimes through an excursion into anatomy or biochemistry His teaching was especially appreciated by senior and postgraduate students, and above all by candidates for the final fellowship

To Guy's men of many generations he represented the hospital , returning there they might find new buildings and changes in the staff, but Fagge was the same As a young man he had the earnest abstracted expression of middle age , as an older one, indeed to the time *of his retirement, he kept the* rounded features and thick dark hair of youth He was reserved, but to those who knew him the most charming of friends He had an intense loyalty and an unswerving sense of duty He always placed the interests of his colleagues his hospital, and his college above his own, and was punctilious in attendance at committees, even those of minor importance His obvious sincerity and disinterestedness carried conviction, and his tenacity usually won the day in debate

Fagge was elected a member of the council of the College of Surgeons in 1921, and was twice re elected, finally retiring in 1938 He was an examiner in anatomy for ten years, and a member of the court of examiners for another ten. In 1928 he gave the Bradshaw lecture, on axial rotation, and in 1929 he was elected vice-president of the college In 1932 he was entrusted with the mission of delivering to the newly formed Royal Australasian College of Surgeons the great mace presented by the Royal College of Surgeons of England While in Australia he delivered the first Syme oration, and was awarded the honorary fellowship of the Australian college, and the honorary degree of M D. of Melbourne University. In 1936 he was appointed Hunterian orator at the Royal College of Surgeons, and delivered a discourse, John Hunter to John Hilton (printed in THE LANCET of Feb. 22, 1936), in which the major influences of his life—his family, his hospital, his college—were combined to produce a memorable oration.

He leaves a widow, a son and three daughters.

RALPH PAUL WILLIAMS

M.D. LOND., M R.C P., D.P.H.

Dr. R. P. Williams, medical officer of the Board of Education and lecturer in public health at King's College Hospital, died at his home in the Hampstead Garden Suburb on May 18, after a long and painful illness borne with cheerfulness and great fortitude His death, so soon after retirement, will sadden his many friends in the school-medical and public-health services.

Born in 1874, the son of the Rev. Dr. Ralph Williams, vicar of St Luke's, Kilburn, he was educated at St Paul's School and King's College His student career was brilliant He won almost every possible scholarship and medal at the college, and on examination he was first in first-class honours (with gold medal in physiology) and first again (with exhibition and gold medal) in materia medica at London University. After taking his degree in 1896 he was house-surgeon to Sir Watson Cheyne (whose two prizes in surgery he gained) and went on to take honours in surgery at the B S. examination He also held house-appointments at the Royal Free Hospital, the Great Ormond Street children's hospital, and the asylum at Broadmoor At King's College Hospital he became medical registrar and tutor After five years in private practice with Dr. Weaver Adams at Slough, he was appointed in 1906 the first school medical officer for Sheffield. Here he was a pioneer, organising the first open-air school in the city, a residential school for children with surgical tuberculosis, the first school clinic for minor ailments, and school shower-baths. These things, though now found in any efficient school service, were then daring innovations. He was also deputy medical officer of health for the city and in that capacity visited Holland and Germany to learn about school baths, open-air schools and dental clinics In 1907 he became professor of public health in the university, but in 1914 he accepted an invitation to join the medical staff of the Board of Education under Sir George Newman.

During the late war he served with the R.A M C. with the rank of captain at the Dardanelles, in Egypt and in France. In 1918 he was recalled to England to be officer at the Air Ministry with the rank of lieut.-colonel, R A F , and charge of the medical arrangements of all flying stations in the United Kingdom Demobilised in February, 1919, he returned to the Board of Education as divisional medical officer In 1927 he became lecturer on public health at King's College Hospital, and in 1934 chief examiner in hygiene, which made him responsible for the teaching of hygiene in training colleges for men. He represented Great Britain at the international congress on open-air education at Brussels in 1931, and again at Bielefeld and Hanover in being appointed vice-president of the international committee. His own contribution to medicine to be found in many papers on open air schools, mental deficiency and the prevention of tuberculosis. He was a devoted fellow of the Zoological Society and spent some of his happiest hours in its gardens and laboratories

Great as were Williams's intellectual powers, a colleague, they were exceeded and to some extent concealed by his spontaneous gaiety of disposition and by his kindness of heart which endeared him to workers of every kind in the educational world. An omnivorous reader, he could hold his own in any discussion, but without the slightest trace of rancour He was equally popular with colleagues at the Board of Education and with student teachers and the officials of the various authorities with whom he came in contact In 1901 he married Mabel Grace, daughter of Mr. J J Wheat, solicitor, of Sheffield, and had a son and two daughters. Apart from his long illness, which clouded the last few months of his service, few men were happier in their own life and work or contributed so fully to the happiness of others.

E. R. TOWNLEY CLARKSON

M A CAMB , M R C.S., DEACON C E

Mr Townley Clarkson, who died in London on May 18 in his seventieth year, will be remembered as a tireless worker in the campaign against venereal disease His approach to the task was unusual. He went to Selwyn College, Cambridge, in 1889 and after taking a classical degree and winning a scholarship became a deacon of the Church of England in and was for two years curate of St. Thomas's, Stepney. It was not until the opening year of the late war that he took a medical qualification, and in the same year he joined the National Council for Combating Venereal Diseases (now the British Social Hygiene Council) and served on its executive and medical committees. All through the war years he was giving lectures to officers and men of the various commands—Eastern, London, Southern and Aldershot—and for the three years 1917–20 was hon 'medical secretary to the council He was particularly dissatisfied, as well he might be, with the then standard of treatment of gonorrhœa, and in our own columns and elsewhere was insistent on the assiduous care required for its elimination Later, when his viewpoint but not his keenness had somewhat changed, he transferred his allegiance to the National Society for the Prevention of Venereal Disease, and finally he became hon secretary of the Medical Society for the Study of Venereal Diseases He held posts in the venereal departments at various hospitals, the West London, St Paul's Hospital, Endell Street, and then the London Hospital. One of his colleagues there writes:

"Clarkson first came to the London during the war period as the associate of the late Mr Frank Kidd in the department known as V.D II From that time until the department became dissociated from the hospital in 1930 he was well known to successive generations of London students whom he instructed in the principles and practice of his special subject. As secretary of the Medical Society for the Study of Venereal Diseases from the time of its inception in 1922 until his death, and as co editor of the British *Journal of Venereal Diseases* from 1925 until his was liked and respected by an ever widening of friends and acquaintances at home and who appreciated his unobtrusive but constant to ensure the success of these undertakings who knew him could not fail to pay tribute to erity and to the generosity of spirit which im a source of sound advice and encourage- his associates and assistants He was never to speak ill of anybody In his work he was d conscientious, an excellent clinician and a eacher During the closing months of his life sibility of progressive loss of vision, although faced, was a source of anxiety and those ew his mind may find consolation in the fact e was overtaken by what he would certainly egarded as the lesser calamity ”

CHARLES THOMAS SAMMAN

M R C S, L S A, LT-COL, R A M C

nel Samman, a former master of the Society of ecaries, died at Ventnor, Isle of Wight, on 7, at the age of 73 He was the son of Alban an of Deddington, Oxford, and was educated ely and at the London Hospital He qualified 8 and then entered the R A M C, in which he for twenty years On retiring he was called o bar by the Middle Temple and joined the eastern circuit, and he also practised at the North London Sessions and the Central Criminal Court Samman became a freeman of the Society of Apothecaries in 1888 and was promoted to the livery in 1891 He was elected to the court of assistants in 1921 and became master in 1928 He was re elected in 1929, when H J Ilott was unable to serve owing to ill health, and again in 1930 when Buchanan's duties at the Ministry of Health prevented him from accepting the post To commemorate this long term of office Samman's portrait by F W Elwell was presented to the society by a number of subscribers and now hangs in the hall

In 1928 the society was faced with the necessity of raising £20,000 to repair the ravages of the death-watch beetle in the *hall*, and the success of the appeal and of the subsequent restoration was largely due to Samman's energy and enthusiasm As a City company the society is largely concerned with the dispensation of hospitality and charity, and these civic activities appealed strongly to Samman, he made an excellent host and shone most in convivial surroundings Impetuous and outspoken, his actions and words did not meet with universal approval, but his love for the society was always apparent

In 1893 Colonel Samman married Eugenie Galloway, by whom he had a son and a daughter, and in 1931 he married Louisa Pfander Swinborne, who survives him

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M P

E Military Training Bill calling up “every male sh subject ordinarily resident in Great Britain ” ing swiftly on its way to third reading as I The Reserve and Auxiliary Forces Bill, iding a simple machinery, without proclamation, call out for service all or any of the members the reserve and auxiliary forces, is also nearing inal stage Just to give a background foreign rs are coming very much into the picture, with na, Central Europe, and Palestine like craggy possibly volcanic mountains And all in little week So swiftly can Parliament move n the will to move exists

* * *

he will to move is penetrating all the nooks and nies of the army structure and not least interesting the *changes in army* cookery which are being rtaken under the management of Major Sir ore Salmon, M P for Harrow Sir Isidore is ng the old army cook system—or lack of system— standing it on its head A school of cookery is peration at Aldershot and a new school is being , also at Aldershot The course is designed st nine months, but at present it only runs for o months because of lack of teachers and need for d expansion

he *first thing required* for training army cooks teachers—and they have not been easy to obtain n the teaching begins and from now on the put of cooks will it is hoped, both increase and rove Another development has been the appoint t of five catering advisers to the five commands, paid salaries rising to £900 a year It will be the k of these advisers to advise upon and give general ction to the cooking of every unit and to see that ry unit has properly trained cooks and suitable cooking apparatus to work with The difficulty of getting the necessary apparatus has been one of the handicaps in getting the scheme rapidly in operation

One interesting reform is that which will put all cooks, those for “other ranks” and those for N C O's and officers' messes, through the same school What is indeed being established is a new cooking service in which the pay and status will be good and in which a man will not be liable to be removed from his duty because its importance is disregarded or misunderstood The cook will become one of the best paid ranks in the army Even the ancient difficulty of the officers' and sergeants' messes being mysteriously supplied with the best cuts of meat and the best rations generally, while the men get the rest —even that is being tackled

These changes will make it much easier to exercise medical control over feeding—as regards balance and adequacy of diet—and the R A M C are to be kept au courant with what is going on and given the opportunity for offering scientific advice The reforms will not be fully in operation for about two years It will not be possible for about another twelve months, to extend the time of cookery training to nine months, and clearly the full effect of the reforms will not be felt until some time after that But if an army really marches on its stomach it should march more comfortably now that this organ is to be cared for more efficiently The nutrition of the soldier should in the future be at high standard And the reflection of the knowledge of what good cooking means from the army centres of instruction should have a considerable influence in raising the cooking standards among the general population

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Medical examinations under the Military Training Bill—very shortly to become an Act—will soon be in operation The regulations for determining the constitution of medical boards and their procedure will be made by the Minister of War During the debates on the bill it was emphasised by the spokesmen of the Government that it was not desired to rush the examinations. The bill as at present drafted, after its amendment in committee, provides specifically that the board may adjourn a medical examination if unable to complete it on one occasion, and further the board may direct the person examined to submit himself for examination by a consultant. It is intended that the boards shall consist of general practitioners and it was mentioned in the debates that the number of members would probably be five. It was also implied that the examination of any candidate would be very thorough and would be carried out by more than one member. It is unfortunate, however, that there has as yet been no clear understanding of the scope of the examination. Is it to be as complete as that for life-assurance purposes? And is use to be made of the old army form which leaves so many points vague? It would be of great benefit if on such matters as the condition of the nose, throat and ear, and a "rheumatic tendency" a clear-cut statement could be made. Such points cannot be embodied in any bill, but will be the subject of regulations.

All regulations are in theory and in some form or another capable of being brought under review by the House of Commons; but in fact they will not be so brought in so far as they concern medical matters unless the initiative comes from medical men. The medical committee in Parliament carries on quiet but persistent activities, but there is a large field in which medical opinion, if it is to be effective in Parliament, must come from outside, acting through one or other of the medical bodies such as the colleges, or through special contacts with the ministries. This question of standards and methods of medical examination of the new militiamen is one in which the profession outside the House can do almost more than the few medical members inside.

* * *

What will happen about the calling-up of medical students and those of the allied and auxiliary professions is not yet settled. The general rule is that there are to be no exemptions; so we must, for the moment, wait and see.

* * *

The proposed repeal of the tax on patent medicines announced by the Chancellor of the Exchequer is having interesting reactions. The tax itself was full of anomalies and its imposition could be escaped by patent-medicine vendors who chose to declare the prescription, but not under all circumstances. The tax was objected to by chemists and by stores who did not employ qualified chemists but who sold patent medicines just like any other goods.

Now that repeal of the tax has been decided by the Chancellor it is suddenly realised that it did at least give an incentive for the declaration of the contents of a medicine and that this incentive will be removed by the repeal. The fog of complete pharmaceutical obscurity will again fall on the market for proprietary preparations and there will be no check on what is being sold. It is being represented to the Chancellor that, if repeal is persisted in, the same legislation is required to make obligatory a statement of contents. It may also be argued that anomalous as the patent-medicine duty is it did at least give the beginning of control of a traffic in medicinal substances which is not a traffic which can be described as good in itself. The proprietary-medicine trade will presumably gain considerably by the remission in tax and already the shares of certain well-known prepara "advanced sharply" as the B B C sta bulletins sometimes phrase it. But it is that a tax should be repealed which especially pressing to have repealed an providing any check on contents of preparations or on standards of potency. the whole question of advertised medicines to be considered from the public-health po The repeal of the tax makes that moment difficult. And if Sir John Simon was adding to human happiness and well bei repeal of a tax he would have been a appreciated benefactor if he had abolished on entertainments and probably done more to the public health.

In the House of Lords on May 22 the Training Bill and the Reserve and Auxiliar Bill were read a second time.

QUESTION TIME

WEDNESDAY, MAY 17

Exporting of Boys

Mr. LEACH asked the Secretary of State for the C if the buying and selling of Chinese children still in Hong-Kong and Malaya; if his attention h drawn to a statement of Mr R. H Oakeley, protector of Chinese, Selangor, that it was no sell a boy, and what steps he was taking to Mr. MALCOLM MACDONALD replied: My attention drawn to a press report of the statement The buying and selling of children with a view to prostitution or other immoral or unlawful p forbidden by law in both Malaya and Hong Kong recent Commission which investigated the *mui tsai* in Hong-Kong and Malaya made inquiries as to the existence of any system of affecting boys, but reported that no such system an element of bondage either on the pretext of or on any other pretext could be found to exist there have been cases of boys sent to Malaya purpose, it is believed, of removing them from of hostilities in China, and I have taken steps myself that the authorities in Hong-Kong and Ma coöperating to maintain a strict watch against the ment of abuses from such arrangements, and if stances should warrant specific legislation to con it will be enacted.

Tuberculosis in Cyprus

Mr. PALING asked the Secretary of State for the what steps had been taken to deal with the of tuberculosis prevalent in Cyprus.—Mr M MACDONALD replied: The Cyprus government active regarding this matter, and a recent exp shows that it would not be correct to suggest rate of tuberculosis in the island is abnormally approximates in fact to the rate in this countr Cyprus government have appointed a doctor tuberculosis officer. Tuberculosis clinics are in two of the principal towns and a new sana being built with assistance from public sub Cyprus and a grant from the Colonial Develop

Mr PALING: Did not a recent report by a man describe the prevalence of tuberculosis great scourge?—Mr MACDONALD: The figures the rate is approximately the same as in this co

Mr. BEN SMITH: Will the right hon. gentleman increasing the nutrition of these people and thus the incidence of this disease?—Mr. MACDONALD considering that.

THURSDAY, MAY 18

Public-health Administration in Wales

Mr. JENKINS asked the Minister of Health wh had considered the terms of a resolution ad meeting of the citizens of Newport, Mon presided over by the mayor, calling the attention of the Government to the low standard of public health administration in certain areas in the principality and asking that early action be taken to reform local government areas with a view to making them more efficient, and what action he proposed to take to give effect to the terms of the resolution —Mr ELLIOT replied I have received a copy of this resolution The matters raised in it will need to be reviewed as part of the full consideration of the report on the anti tuberculosis service in Wales and Monmouth, on which I am in communication with the local authorities

Pollution of Ullswater

Mr T E HARVEY asked the Minister of Health whether his department would be represented at the conference which was being arranged by the directors of the Basinghall Mining Syndicate with the representatives of the Lakes urban council, the Friends of the Lake District, and others to consider the question of the pollution of Ullswater by the discharge of lead mining effluent into the lake ?—Mr ELLIOT replied No, Sir The primary responsibility for the prevention of pollution rests with the local authorities under the Rivers Pollution Prevention Act, 1876, and in view of my judicial functions under that act I could not appropriately take any part in the matter at the present stage

MONDAY, MAY 22

Peckham Health Centre

Dr SUMMERSKILL asked the Parliamentary Secretary to the Board of Education whether he was aware that owing to financial difficulties the Pioneer Health Centre Peckham, would be forced to close unless help was forthcoming, and would he take action accordingly —Mr KENNETH LINDSAY replied The Board are fully aware of the valuable pioneer work done at this centre and of the difficulties it is at present encountering My noble friend has recently considered whether there was any possibility of securing for it public financial support The only means of doing this under the Education Act would be by way of a grant from the London County Council to the centre as a community centre If the council were to incur expenditure for this purpose it would attract grant from the Board at the rate of 50 per cent

Mental Deficients and Farm Work

Mr THOMAS WILLIAMS asked the Minister of Health how many local authorities and voluntary institutions let out mental deficients under guardianship for work on farms, who was responsible for deciding the number of hours to be worked, and the wages paid, and whether these local authorities and institutions were made aware of the conditions of employment —Mr BERNAYS, parliamentary secretary to the Ministry of Health, replied: Arrangements for mental defectives to be sent out on licence to work on farms are made by the medical superintendent of the institution with the concurrence of two members of the committee of management They are responsible for seeing that the conditions of employment are suitable and it is their duty to keep themselves informed of the circumstances under which the defective is working I am not in a position to state the number of institutions whether provided by local authorities or voluntary bodies which have made such arrangements

Veterinary Service in Wales

Mr HOPKIN asked the Minister of Agriculture if he would consider setting up a field station for veterinary service in Wales to work in conjunction with a suitable university —Sir REGINALD DORMAN SMITH replied If the hon member is referring to a field station for research and investigational work a station on a fixed site has not so far been found necessary in Wales Full field facilities have readily been provided by Welsh farmers for the work of the two veterinary investigation officers for Wales who are stationed at the University College of North Wales Bangor and at the University College of South Wales and Monmouthshire Cardiff

TUESDAY, MAY 23

Dust in Cardrooms

Mr TOMLINSON asked the Home Secretary whether he was satisfied that the regulations at present in force for the elimination of dust in cardrooms were adequately complied with —Mr PEAKE replied My right hon friend would be glad to see substantial improvements in the prevention of dust in cotton mills, but the question is to a large extent one of what is practicable The matter has been extensively discussed with the industry from time to time and some progress has been made but my right hon friend is not satisfied that more could not be done, and the chief inspector of factories proposes to hold a conference on the subject at Manchester at an early date

Sale of Secret Remedies

Sir RALPH GLYN asked the Minister of Health whether he was satisfied that the proposal in the Finance Bill to repeal the tax on proprietary medicines was in the interest of the health of the nation, and what steps he proposed to take in order to exercise control of the sale of secret remedies as if the repeal be effected, there would be no incentive or necessity for makers to disclose the formulæ of such remedies, nor any restriction, other than that imposed by the Poisons and Pharmacy Act, upon their recommendation and sale by all and sundry —Mr BERNAYS replied As regards the first part of the question my right hon friend does not think that the repeal of the Medicine Stamp Duty should have any adverse effect on the health of the nation As regards the second part, the question whether any further control should be imposed on the sale or advertisement of proprietary medicines is engaging my right hon friend's attention but he cannot undertake to introduce legislation in the matter at the present time

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BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION

The annual meeting of this association was held on May 4 with the Marquess of Willingdon in the chair In presenting his report Sir William Peel chairman of the association, said that in the past year it had been possible materially to increase the number of workers in the field There are he said still more than two million lepers in the British Empire and their care forms one of the liabilities which offset the asset side of our empire The expenditure on medical services in the colonies has steadily increased for many years, but the resources are still not equal to the needs, and the various missions and societies that work on this field need help both in finance and in advice The association gives grants to these missions and sends out workers to supplement their staff The efforts of the association are mainly concentrated in Nigeria but there has lately been considerable expansion in East Africa, largely as the result of Dr Muir s visit last year

In his address on the medical aspects of the association s work Sir John Megaw emphasised the value of the tours made by Dr Muir, the medical secretary, in bringing inspiration to workers in isolated stations, and also of his work on the association's *Medical Review* and other publications The outlook on leprosy has completely changed, he said in the last twenty years thanks chiefly to the work of Sir Leonard Rogers it need no longer be looked on as incurable The discovery of an effective treatment has also helped to abolish the cruel system of compulsory segregation of lepers many are now treated as outpatients in dispensaries, others are admitted to settlements and hospitals run on the same lines as those for tuberculosis Lepers no longer conceal their disease for fear of imprisonment but come for treatment at an early stage The modern leprosy unit must cover not only the whole range of social and economic causes which make the existence and spread of leprosy possible but also those other diseases such as malaria hookworm disease and dysentery, which lower the resistance of the body and render it an easy prey to the seeds of leprosy The first step in the campaign against leprosy must be to provide effective treatment, the next is to attack the other prevalent diseases the malnutrition and the hygienic conditions that prepare the soil for its propagation

MEDICAL NEWS

University of Oxford

Applications are invited for a Horatio Symonds studentship in surgery. Candidates must be male graduates of the university Further particulars will be found in our advertisement columns

University of Cambridge

Dr F B Parsons and Mr P. H. R Ghey have been appointed liaison officers between Addenbrooke's Hospital and the university.

Society of Apothecaries of London

The following candidates have satisfied the examiners for the Mastery of Midwifery —

K A Evans, Miriam K McAllum, H M Rees, and C V. Salisbury

London School of Hygiene and Tropical Medicine

The following awards have been made to members of the classes in tropical medicine and hygiene —

Balfour studentships—Dr P E C Manson-Bahr and Dr C McT Hopkins
Duncan medal—Dr L M Sanghvi
Lalcaca medal—Dr A C E Cole

National University of Ireland

Prof John Saunders has been appointed to represent the university at the conference of the National Association for the Prevention of Tuberculosis at Belfast in June Prof. James O'Connor has been reappointed to represent the university on the Therapeutic Substances Advisory Committee for three years from Aug. 1

National Society for the Prevention of Venereal Disease

At the twentieth annual meeting of this society, held in London on May 22, Lord Horder was elected president in succession to Sir Basil Peto, who has held office since 1926. The chairman of the society is Dr R A. Lyster, the treasurer Dr. A Benjamin, and the hon medical secretary Dr Joan Malleson The offices are at 4, Fitzroy Street, W 1

Central London Throat, Nose and Ear Hospital

From June to November the postgraduate school of this hospital will hold a course in otorhinolaryngology which will include lectures and demonstrations on anatomy and physiology, pathology and bacteriology, radiology, endoscopy, and speech therapy Further information may be had from the secretary of the school, Gray's Inn Road, W.C.1

British Empire Cancer Campaign

The council of the campaign has instituted a Hailsham essay prize of £100. The first award will be made in 1940 for the best essay on one of the following: The influence of sepsis on the spread of cancer of the tongue and floor of mouth; the treatment of carcinoma of the vulva; hereditary factors in cancer. Candidates are limited to those directly responsible for collecting the material and filling in the case-sheets of the clinical cancer research committee of the campaign. Further particulars will be found in our advertisement columns

International Union against Tuberculosis

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of the union six scholarships, each of 2000 liras, with board and lodging at the Carlo Forlanini Institute in Rome. The scholarships will preferably be awarded to young doctors already familiar with tuberculosis problems Candidates in this country should send their applications through the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W C 1, from whom further information may be had

The union offers a biennial prize of a value of 2500 francs in memory of its founder, the late Prof Leon Bernard The prize will be awarded for the second time in 1940 to the author of an original essay in French or in English on conjugal tuberculosis Further information may be had from the National Association for the …vention of Tuberculosis

Charing Cross Hospital

On Thursday, June 8, at 4 P.M., Lady Stamp wi… distribute the prizes to the students of this hospi… Lord Stamp will deliver an address

National Hospital for Diseases of the Heart, Lond…

The St. Cyres lecture for 1939 will be delivered at 5 P. on June 8 at 1, Wimpole Street, London, W 1, by Pr… W T Ritchie, president of the Royal College of Physic… of Edinburgh He will speak on acute rheumatic cardit…

Family Planning Association

The National Birth Control Association has chang… its name and will in future be known as the Fam… Planning Association. The association should still b… addressed at 69, Eccleston Square, London, S W 1

Outpatient Time-table

King Edward's Hospital Fund for London has issu… the May edition of the outpatient time table at th… London voluntary hospitals to doctors in the London ar… Further copies may be had free from Messrs Geor… Barber and Sons, 23, Furnival Street, E C 4

University of London

Mr W E Le Gros Clark, F R S, Dr Lee's professor o… anatomy in the University of Oxford, has been appointe… to the university chair of anatomy at University College

Prof Le Gros Clark, who qualified in 1917, received h… medical education at St Thomas's Hospital, where after hold… resident appointments he was appointed demonstrator i… anatomy He became F R C S in 1920 and spent the ne… three years in Sarawak as principal medical officer In 1… he was appointed reader in anatomy in the University o… London and from 1927 to 1929 he held the university chair at St Bartholomew's Hospital After four years as professor o… anatomy at St Thomas's Hospital he was appointed in 19… to the chair at Oxford In the same year he published his te… "Early Forerunners of Man," and the following year he wa… elected F R S

Dr Samuel Nevin has been appointed to the unive… chair of the pathology of mental disease at the Maud… Hospital.

Dr Nevin, who is 33 years of age, studied medicine at th… Queen's University of Belfast where he won many prizes an… medals He graduated M B with first-class honours in 1… and two years later he obtained his B Sc also with first-cl… honours In 1930 he was awarded a gold medal for his M… thesis After holding house-appointments he became demo… strator in physiology at the Queen's University in 19… Tw… years later he came to London with a Mackay Wilson trave… scholarship to work at the London Hospital and the Natio… Hospital, Queen Square. With a Halley Stewart res… scholarship he continued his work in the clinical research … of the latter hospital till 1935 In the following year he wa… appointed assistant physician and neuropathologist to t… Maida Vale Hospital for Nervous Diseases As part t… Pinsent-Darwin student he also undertook investigations … mental pathology at the Maida Vale Hospital and at the res… unit, Royal Eastern Counties Institution, to which he wa… appointed consulting neurologist in 1938 In 1937 he be… assistant neurologist to King's College Hospital and con… neurologist to the transferred mental institutions of the Lo… County Council He has published papers on the che… of muscles and on muscular degeneration

Mr P D F Murray, D Sc, has been appointed to t… university readership in biology at St Bartholo… Hospital medical college He has held a Rock… travelling fellowship and a Smithson research fellow of the Royal Society. Since 1937 he has held a teac… post in the department of zoology at Bedford Colle…

The title of professor emeritus of medicine in t… university has been conferred on Dr T R Elliott F.R… on his retirement from the chair of medicine and t… directorship of the medical unit at University Co… Hospital medical school.

The degree of D Sc has been conferred on Mr F… Young, Ph D, of the National Institute for Me… Research.

The special university lectures on human anatomy… morphology which Dr A Hrdlicka was preve… illness from giving in April will be held at 5 P.M. May 31 and June 1 at University College, Gower St… W C 1. Dr Hrdlicka will speak on the present st… our views on human evolution and on the racial fa… and realities of European people.

DOCTORS LIB

Royal Free Hospital

On Thursday, June 1, at 3 P M, Mr Hugh Lett, F R C S, will present the prizes and certificates to the students of this hospital

Disposal of the Dead

The eighth joint conference of burial and cremation authorities will be held at Portsmouth and Southsea from June 26 to 29 Lord Horder, who is president of the cremation section, will deliver an address Dr A B Williamson, medical officer of health for Portsmouth, will speak on the disposal of the dead after air raids

Proposed Mental Hospital at Anerley

To meet an urgent need for more accommodation for *uncertified patients suffering from senile dementia, of the* class now received at Tooting Bec Hospital, the L C C proposes to build a new institution on part of the site of the former Anerley residential school Accommodation will at first be limited to 340 patients, but with administrative buildings and staff quarters sufficient to allow for enlargement to provide for 612 patients There will be two blocks for females, each taking 136 patients and one for 68 male patients The ten wards will each comprise one 24 bed dormitory, one 8 bed dormitory and two single rooms, and the staff accommodation will include a home for 62 nurses

Dr Barnardo's Homes

The annual general meeting of these homes was held on May 17, with Sir Malcolm Delevingne in the chair Last year 1718 destitute children were admitted to the homes, and there were 8258 children in residence at the end of the year This included 1384 babies under five, 379 sick, crippled or afflicted children, 1133 boys and girls under industrial and technical instruction, and about 450 lads in training for the Navy and Mercantile Marine During 1938 1620 young people were placed out in life The homes comprise 293 separate buildings and branches and include 2 model villages, 2 sea training establishments, a technical school, 11 curative and convalescent homes, and 14 ever-open doors There are also many smaller branches in various parts of the country and migration centres in Canada and Australia The homes may be addressed at 18, Stepney Causeway, London, E 1

Recent Medical Wills

Mr C H Golding Bird, who died on March 6, left 42,726 with net personalty £38 676 He left his house atfield at Meopham to Guy's Hospital After the pay ent of various charitable bequests the Gravesend Hos tal and Epsom College will each receive a third of the sidue of his estate which is subject to a life interest

Sir Robert Johnstone who died on Oct 26 left personal tate in Great Britain and Northern Ireland valued at 0,651 Subject to certain bequests and life interests directed that it should be divided in specified propor on between the Queen's University, the Royal Victoria ospital, and the Royal Maternity Hospital, Belfast

ospital Librarians

At the fifth annual meeting of the British section of the ernational Guild of Hospital Librarians held at mbeth Palace on May 9, the Marquess of Hamilton, urman, said that the hospital library service in London s now nearly complete, adding that it would be put to ormidable test next year when the international con nce would bring many librarians from abroad He ented the shortage of librarians, mainly due no doubt national service but hospital librarianship was also great importance and must continue Mr Harold mmond said that hospital librarians were not only ding sick people to while away dreary hours but were ng many of them their first opportunity of appreciating advantages of reading Miss Blyde (sister matron of 's College Hospital) told how greatly the library ice was appreciated by patients and spoke of its e from the nurses' point of view Hospital librarian meant much more than merely giving out books the meeting by kind consent of the Archbishop of erbury, members were shown over the library and parts of the palace

Westminster Hospital

On June 15 at 3 P M a service of thanksgiving for the past work of this hospital will be held at Westminster Abbey The Rt Rev H Hensley Henson, formerly Bishop of Durham, a life governor of the hospital, will preach the sermon Applications for tickets may be made to the secretary of the hospital, Broad Sanctuary, S W 1

On May 23 Lord Wigram presided at the last quarterly meeting of the governors to be held in the board room of the old hospital before the removal of patients and staff to the new buildings opened last month by the King Mr Bernard Docker, who presented the report of the building committee, said that the transfer of stores, equipment, records and patients would begin on June 5, and on June 12 the full services of the hospital, including the private ward service, would be functioning in the new building New hours for attendance at outpatient clinics had been circulated to all medical practitioners in the district served by the hospital and to all doctors in the habit of referring patients to Westminster Hospital Votes of thanks were passed to Mr Charles Power the secretary of the hospital, to Mr Docker for his outstanding personal effort in the collection of the final £100 000 of the appeal fund, and to Mr Rock Carling, F R C S, for his technical guidance and assistance

Medical Insurance Agency

At the annual meeting held on May 17 at B.M.A House, a sum of £2100 was voted as the first instalment of a fund for the education of orphan girls to bear the name of Squire Sprigge The meeting approved recommendations of £2000 to the Royal Medical Benevolent Fund and of £500 to Epsom College, in each case the value of the grant will be enhanced by about 35 per cent under covenant recognised by the revenue authorities The ladies' guild of the R M B F was allotted £100 and the Sherman Bigg fund of Epsom College £300, two smaller donations amounting to £127 10s were also authorised This brings the total for charities to well over £6000 The following were elected to the hon committee of management the first four being re-elections the others in place of Lady (Florence) Barrett and Dr R Langdon Down (resigned) and Sir Robert Bolam (deceased) Sir Humphry Rolleston (chairman) Sir Ewen Maclean Mr Bishop Harman, Mr H S Souttar Dame Barrie Lambert, Dr Robert Hutchison, and Prof F R Fraser Dame Barrie succeeds Dr Langdon Down as representative of the agency on the conjoint committee The proceedings terminated with a vote of thanks to Sir Humphry who has served as chairman continuously since the agency was incorporated

The Psychopathic Clinic

The clinic in Portman Street, W 1, run by the Institute for the Scientific Treatment of Delinquency has now completed its fifth year of working and its annual report shows that 168 new patients were seen during 1938, compared with 167 in 1937 That there was no increase is ascribed to the fact that during the crisis in September and for some weeks afterwards very few cases were referred Of the new cases 106 were drawn from the courts, 24 from medical practitioners and clinics, and 11 from relatives and friends; the remainder came from philanthropic societies employers and so on or on their own initiative Of the 247 cases under treatment or on the waiting list 7 were discharged as cured some fundamental cause of the delinquency having been discovered and removed and 26 as improved the patient having reached a stable non-delinquent state It has been decided to set an arbitrary period of five years freedom from delinquent acts as a criterion of cure in the improved group and a follow-up of old cases will now be attempted each year About a third of the cases treated were diagnosed as psychoneurotic and another third as character cases, including sex perverts, about two thirds were over and a third under 17 years of age and half the cases were referred for theft and more than a quarter for sex offences Cases for psychological treatment fall into two groups those requiring intensive psychotherapy involving from fifty to several hundred interviews and those requiring short psychotherapy or simple psychiatr handling and advice, involving from five to fifty interviews Most cases are in the latter group, but in all cases treatment and observation may extend over a long period. The new Criminal Justice Bill is likely to lead to increased demands on the clinic but at the same time will facilitate its work both administratively and financially

Conscription, Evacuation, and Casualties

In his presidential address to the annual congress of the Royal Institute of Public Health and Hygiene at Hastings on Tuesday Mr. Walter Elliot, the Minister of Health, described the calling-up of men of 20–21 for military service as an audit of the success or failure of the health services affecting the lives of the citizens up to that age The infant-welfare services, the school medical inspection, the closing of the gap between school medical inspection and entry into health insurance, factory legislation, and all the housing and public-health acts of our time would be brought to a very sharp focus—namely, what is the health of John Smith at this crucial period in his early adult life, and what is the health of the 300,000 other John Smiths who came forward along with him? The emergency evacuation scheme also raised important public-health problems Arrangements were being made for the movement of approximately three million people, without disturbing accommodation already reserved privately in the safer areas for another million. These plans were based upon a house-to-house survey in the course of which between five and six million houses had been visited by 100,000 visitors Work was now being done on an extension of the plan arising from the revision of the distribution of evacuation and reception areas which he announced in Parliament last week Further extensions beyond those announced were, he believed, impracticable The other great emergency service—that which provided for the treatment of casualties—was also well advanced There were in Great Britain in peacetime about 500,000 hospital places, including 150,000 in mental hospitals It was estimated that 200,000 hospital beds could be made available for the treatment of casualties within the first twenty-four hours—beds for which staff already existed—and another 100,000 beds, for which there was at present no staff, could be provided within a week In addition, a programme for the construction of new hutted annexes containing about 50,000 beds was now under way and it was hoped that these would afford additional facilities for hospital treatment in peace as well as in war All this additional accommodation meant that there must be a great increase in the numbers of trained auxiliary nurses.

Births, Marriages and Deaths

BIRTHS

COOKE —On May 16, in Boston, U S A, the wife of Dr W Trevor Cooke—a daughter

DUNLOP —On May 20, at Tangier, the wife of Dr H H Dunlop —a daughter

PAGAN —On May 16, at Southampton, the wife of Dr A T Pagan—a daughter

PATERSON —On May 21, at Portsmouth, the wife of Dr Gerald PATERSON—a son

PULVERTAFT —On May 16, at St Mary's Hospital, the wife of Dr R J V Pulvertaft—a son

MARRIAGES

MARTYN—KELLY —On May 18, Sir Henry Martyn, F R C S, to Freda Kelly, M R C S

WOOD—ARBER —On May 22, at Chelsea, Adrian R Wood, M B, of Andover, to Elizabeth Rapley Arber

DEATHS

CAMPBELL —On May 19, at Harrogate, Alexander Sydney Campbell, M B St And

CLARKSON —On May 18, Ernest Robert Townley Clarkson, M A Camb, M R C S, of Queen Anne Street, W 1, aged 69

FAGGE —On May 19, at Nuffield House, Guy's Hospital, Charles Herbert Fagge, M S Lond, F R C S, aged 66

PATERSON —On May 23, at the Cardiff Royal Infirmary, Donald Rose Paterson, M D Edin, F R C P, F S A, aged 76

SAMMAN —On May 17 at Ventnor, Isle of Wight, Lieut-Colonel Charles Thomas Samman, M R C S R A M C, aged 73

WILLIAMS —On May 18, at Erskine Hill, London, N W 11, Ralph Paul Williams, M D Lond, M R C P

—A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

May 29 to June 4

SOCIETIES

BIOCHEMICAL SOCIETY.
SATURDAY —3 P M (Institute of physiology, University Glasgow), short communications and demonstrations

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON
WEDNESDAY —5 P M (University College, Gower St W C 1), Dr A Hrdlicka (Washington) The Pre Status of our Views on Human Evolution
THURSDAY —5 P M, Dr Hrdlicka The Racial Fallacies a Realities of European Peoples

TAVISTOCK CLINIC, Malet Place, W C 1
WEDNESDAY —3 P M, Dr Cedric Shaw Fatigue Sta 4 30 P M, Dr H Crichton-Miller. Alcoholism and D Addiction
THURSDAY —6 P M, Dr Alice Hutchison Disorders Childhood—Fears and Anxiety, Enuresis, and N Terrors

BRITISH POSTGRADUATE MEDICAL SCHOOL Duca Road, W 12
WEDNESDAY —Noon, clinical and pathological confere (medical) 2 P M, Dr D M Stone The Bacteriolog Diagnosis of Venereal Disease, (II) Gonorrhœa 3 P M clinical and pathological conference (surgical) 4 30 P M Prof A A Miles The Isolation of Bacterial Antigens
THURSDAY —2 15 P M, Dr Duncan White radiolog demonstration 3 30 P M, Dr Elizabeth Hurdon Radiation Therapy in Gynæcology—Malignant Conditions
FRIDAY —2 P M, clinical and pathological confer (obstetrics and gynæcology)
Daily, 10 A M to 4 P M, medical clinics, surgical clinics operations, obstetrical and gynæcological clinics operations

ST MARY'S HOSPITAL, W 2
TUESDAY —5 P M (Institute of pathology and resea Mr Joseph Needham, Sc D, Genes, Organisers Pathology.

ST GEORGE'S HOSPITAL, S W 1
THURSDAY —5 P M, Dr Anthony Feiling neurolog demonstration

HOSPITAL FOR SICK CHILDREN, Great Ormond St W C 1
THURSDAY —2 P M, Mr T Twistington Higgins Recog and Treatment of Hydronephrosis 3 P M, Dr Re Lightwood Whooping-cough Prevention, Treatm and Complications
Outpatient clinics daily at 10 A M and ward visits at 2 P M

FELLOWSHIP OF MEDICINE AND POST GRADUAT MEDICAL ASSOCIATION, 1, Wimpole Street, W 1
MONDAY to SATURDAY —ST MARY'S HOSPITAL, Padd W 2, Tues and Thurs, 8 P M, clinical and path M R C P course —BROMPTON HOSPITAL, S W 3 and Fri, 5 15 P M, M R C P course in chest diseas

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATI
TUESDAY —4 P M, visit to Springfield Hospital, Tootin

INSTITUTE FOR THE SCIENTIFIC TREATMENT DELINQUENCY, 8, Portman Street, W 1
SATURDAY and SUNDAY —Mr Phineas Quass LL B W H Gillespie, Dr W H de B Hubert, Dr J Pearce, Dr Denis Carroll and Dr C L Burns Aspects of Delinquency

Appointments

BARBER, W C, M B. Camb, F R C S, resident surgical at the East Suffolk and Ipswich Hospital

COOK L C, M D, D P M, medical superintendent a Hospital (L C C)

ELPHINSTONE, J H, M R C S, second assistant medica at the Camberwell House Mental Hospital

FLORENTIN, MIRIAM, M B Manc, D P H, assistant m officer for Stoke Newington

GILMOUR, WILLIAM, M D Glasg, D P.H, medical o health for Hamilton

KHANNA, V N, M B Lucknow, D O, D O M S, hou at the Birmingham and Midland Eye Hospital

LAMB, H D, L M S S A, L M, assistant medical o Southend Municipal Hospital

LUCAS, S H, M R C S, D P M second assistant med at Leavesden Hospital (L C C)

LYNCH, J G, M B N U I, junior assistant medical the Royal Earlswood Institution, Redhill

MCKENZIE, WILLIAM, M B Camb, F R C S, asst to the Central London Throat Nose, and Ear H

MAGEE, VINCENT, M B Belf, visiting pathologist a logist to the Warrington Infirmary

PROWSE, C B, M B Camb, M R C P, hon m assistant to the Royal Alexandra Hospital Children, Brighton

RADCLIFFE, ANTHONY, M B Dubl, F R C.S, D L O surgeon to the Central London Throat, No Hospital

SMITH, A ELLIOT, M A Camb, F R C S, surgical r the Royal Berkshire Hospital, Reading

WATSON, A J, M B Lond, F R C S, orthopædic surgeon to the Coventry and Warwickshire Hospital

ATTERSON, J W, M B Edin, deputy medical officer of health for Morecambe

EBSTER R C, M D N U I D P H medical officer of health for Darwen

HITE, J GRAHAM M D Ontario resident surgical officer at the Birmingham and Midland Eye Hospital

estminster Hospital—The following appointments are announced —

HARDING, H F F R C S assistant orthopædic surgeon

SEARLE W N M B N Z F R C S M R C O G, assistant obstetric surgeon

STEADMAN, B ST J B D S Lond L R C P L D S dental surgeon

ORGANE GEOFFREY, M B Camb D A anæsthetist

O DOHERTY, COLMAN M B N U I D P H, D M R & E, assistant physician to the radiological department

GAVEY C J M D Lond M R C P, chief medical assistant and registrar

HARLAND J C M B Lond M R C P, chief medical assistant and registrar

HART, F DUDLEY, M B Edin M R C P chief medical assistant and registrar

D ABREU, F A, Ch M Birm F R C S chief surgical assistant and registrar

RUNDLE F F M B Sydney F R C S chief surgical assistant and registrar

ASHCROFT, D WALKER M B N Z F R C S D L O chief assistant and registrar to the ear nose and throat department

HAMBLY, E, M B Lond F R C S chief assistant and registrar to the orthopædic department

GRAHAM, JOHN M R C S medical officer to the surgery and outpatient reception centre

TOWNSEND, R F, M R C S medical officer to the surgery and outpatient reception centre

COX, ROBERT, M B Lond F R C S medical officer to the surgery and outpatient reception centre

xamining Surgeons under the Factories Act 1937 Dr H W F CROFT (Rufford District Lancaster) Dr S McCLEMENTS (Wellington District, Somerset) Dr C A MACARTHUR (Oban District, Argyll) Dr W A CLEMENTS (Daventry District Northampton)

Vacancies

For further information refer to the advertisement columns

ntrim County Mental Hosp—Res med supt, £900

ylesbury Royal Buckinghamshire Hosp—Second res M O at rate of £150

angor Carnarvonshire and Anglesey Infirmary—Sen and Jun H S s £170 and £120 respectively

arnsley Beckett Hosp and Dispensary—Jun H S £150

arnstaple North Devon Infirmary—Sole res M O at rate of £150

arrow in Furness County Borough &c.—Obstetric officer £1000

erkshire County Council—Asst M O £500

erkshire Education Committee—Asst school M O, £500

irmingham Maternity Hosp—Res M O and registrar, £200

irmingham and Midland Hosp for Women—H S, at rate of £100

olingbroke Hosp Wandsworth Common S W 11—H S and cas O each at rate of £120

istol University—Lectureship in pathology £400 to £500

itish Postgraduate Medical School Ducane Road W 12—First asst in dept of surgery £300

ambridge Addenbrooke s Hosp—Res anæsthetist and emergency officer, at rate of £130

anterbury City and County—M O H and school M O £800

ntral London Throat Nose and Ear Hosp, Gray s Inn Road W C 1—Registrar, £150

ester City Hosp—Jun res M O at rate of £130

onnaught Hosp Walthamstow E 17—H P H S and cas O, each at rate of £110

ornwall County Council—Deputy county M O £720

erby Derbyshire Royal Infirmary—H S for cas dept, £150

oncaster Royal Infirmary—H S to ear, nose and throat dept and res anæsthetist at rate of £150

orset County—Asst county M O £500

readnought Hosp, Greenwich S E 10—H P and H S each at rate of £110

ast Lothian East Fortune Sanatorium—Jun asst M O, at rate of £180

izabeth Garrett Anderson Hosp Euston Road N W 1—Hon asst obstetrician

ssex County Council—Temp tuberculosis officer £12 per week

inchley Borough—Asst M O H, £ [illegible]

olkestone Royal Victoria Hosp—Two H S s each £120

eneral Lying in Hosp York Road Lambeth S E 1—Jun res M O and anæsthetist, at rate of £100

uy's Hosp S E 1—Medical officer for dept of V D £350

alifax General Hosp—Jun res M O, £250

alifax Royal Infirmary—Cas O £150

osp for Sick Children Great Ormond Street W C 1—Two H P's and H S each at rate of £50

osp for Women Soho Square W 1—Two hon anæsthetists

uddersfield Royal Infirmary—H S to abnormal maternity dept and two H S s each at rate of £150

*Subject to confirmation

India, Assam Medical Research Society Shillong—Research officer Rs 1000/- per mensem

Kidderminster and District General Hosp—Sen and Jun H S s at rate of £150 and £100 respectively

King s College Hosp Denmark Hill, S E 5—Asst. physician to children s dept

Kingston County Hosp—Res asst obstetrician £350 Also res asst physician £350

Leeds Meanwood Park Colony—Med supt £800

London County Council—Res med supt for St James Hosp Balham £1300

London Hosp E 1—Clin asst in X ray dept, £100

London University—Chair of pathology at St. Thomas s Hosp Medical School £1200

Manchester Ancoats Hosp—Asst M O for V D clinics 1 guinea per attendance

Manchester, Duchess of York Hosp for Babies—Sen res M O at rate of £125

Manchester, Saint Mary s Hosps—Res anæsthetist, £100

Manchester Hosp for Consumption and Diseases of the Throat and Chest—Asst M O for Crossley Sanatorium £200

Manchester Royal Children s Hosp Pendlebury—Res M O, at rate of £150

Manchester Royal Infirmary—Chief asst to surgical unit £250

Manchester and Salford Hosp for Skin Diseases—Two asst M O's £150

Manchester University—Asst director in dept of clinical investigations and research at Manchester Royal Infirmary £100

Mansfield, Harlow Wood Orthopædic Hosp—H S, at rate of £200

Middlesex County Council—Various appointments £650 a year to 3 guineas weekly

Newcastle upon Tyne, Hosp for Sick Children—Hon physician Hon surgeon Two hon asst physicians Also two hon asst surgeons

Newport County Borough—Asst M O H £500

Nottingham City Education Committee—Asst school dentist, £450

Nottingham General Hosp—H S and res anæsthetist each at rate of £150

Oldham County Borough—Deputy M O H and asst tuber officer, £750

Oswestry Robert Jones and Agnes Hunt Orthopædic Hosp—H S, at rate of £200

Oxford, Radcliffe Infirmary—Surg reg £400

Oxford University—Horatio Symonds studentship in surgery, £80

Plymouth, Prince of Wales s Hosp, Greenbank Road—Res surg O, at rate of £225

Portsmouth, Saint Mary s Hosp—Jun asst res M O, £250

Princess Elizabeth of York Hosp for Children Shadwell E 1—Asst physician Also H S and cas O each at rate of £125

Queen Mary's Hosp for the East End Stratford E 15—Radiologist £350 Also registrar to ear nose and throat dept 50 guineas

Queen s Hosp for Children Hackney Road E 2—Asst surgeon

Reading Royal Berkshire Hosp—Res H S, res H S to special depts, and res cas O each at rate of £150

Royal Air Force.—Commissions.

Royal Eye Hosp St George s Circus S E 1—Refractionist to L C C children s dept £80

Royal Free Hosp &c W C 1—Res asst pathologist £150

Royal Masonic Hosp, Ravenscourt Park W 6—Res surg O, at rate of £250

Royal Naval Medical Service—M O's

Royal Northern Hosp Holloway N 7—Second physician for diseases of the skin

St Bartholomew's Hosp Medical College E C 1—Sen demonstrator of physiology

St Mark's Hosp for Cancer, Fistula &c, City Road E C 1—H S at rate of £120

St Mary's Hosp, W 2—Hon physician in charge of dept for diseases of children

Saint Pancras Borough Council N W 1—Temp asst M O £ [illegible]

St Peter s Hosp for Stone &c, Henrietta Street W C 2—Clin assts to hon staff

Salvation Army, Mothers' Hosp Lower Clapton Road E 5—Jun res M O at rate of £80

Samaritan Free Hosp for Women Marylebone Road N W 1—Pathologist, at rate of £250

Sheffield, Jessop Hosp for Women—Registrar, £250 Sen res O and res M O each at rate of £150 Also H S s each at rate of £100

Sheffield Royal Infirmary—Two surgical first assts and clin asst, each £300 Also res H S at rate of £ [illegible]

Sheffield University—Professor of bacteriology £1000 Also asst lecturer in pharmacology £350

Sittingbourne and Milton Urban District—M O H £ [illegible]

Stoke-on-Trent North Staffordshire Royal Infirmary—H S to aural and ophth depts at rate of £1 [illegible]

Swansea County Borough—Asst M O £ [illegible]

Tunbridge Wells Kent and Sussex Hosp—Res surg O, £ [illegible]

Wakefield Stanley Royd Park Mental Hosp—Asst M O £ [illegible]

Warrington County Borough—M O in charge of Borough General Hosp, £ [illegible]

West Bromwich Hallam Hosp—H S at rate of £ [illegible]

West London Hosp, Hammersmith W 6—Res cas O and res anæsthetist each at rate of £ [illegible]

Westminster City—Temporary asst M O H £ [illegible]

Westminster Hosp Broad Sanctuary S W 1—Hon anæsthetist asst and registrar Also chief obstetric asst and registrar £ [illegible]

Winchester Royal Hampshire County Hosp—Res surg O and H P at rate of £ [illegible] and £ [illegible] respectively

Windsor King Edward VII Hosp—Pathologist £ [illegible]

Wolverhampton Royal Hosp—Two H S s and H P each at rate of £ [illegible]

Worcester Royal Infirmary—Cas O £ [illegible]

York County Hosp— [illegible] £ [illegible]

NOTES, COMMENTS, AND ABSTRACTS

A FURTHER STAGE IN AIR-CONDITIONING

THE ability to control the temperature of the atmosphere and to exclude soot and sound is looked on in this country as a luxury even after due allowance is made for its proved value in certain chronic pulmonary disorders. It is otherwise in the tropics where it is becoming increasingly evident that conditioned ventilation should not be regarded only as a privilege of the wealthy but as of real economic importance. It is not merely physiological caprice that enables the British miner to work under conditions that are little removed from tropical without ill effect while the West African administrator requires frequent periods of leave · the day's work of a miner is rounded with an equable sleep, but the tropical worker has no such nocturnal respite from a trying climate, and hence any device that gives him a chance of "sleeping cool" will profoundly affect his health and efficiency.

This problem has been approached scientifically by Dr. G. P. Crowden, of the London School of Hygiene and Tropical Medicine, assisted by Newcon Industries Ltd., and his work has resulted in the "Rektifair" air-conditioned cubicle for use in the tropics It is a practical application of Crowden's original experiments on the conduction of heat and cold, in which he showed that bright metallic surfaces radiate little heat compared with black matt surfaces (see *Lancet*, 1934, 1, 37). With this in mind he has constructed a cubicle containing a thin layer of aluminium felt within its walls. This has been found to reduce considerably the dry-bulb temperature of the air inside. It has, however, no influence on the degree of humidity, and a satisfactory lowering of the wet-bulb temperature is, if anything, more important than a fall in the dry-bulb reading. This difficulty is overcome by fitting a small air-conditioning plant to the cubicle for the purpose of controlling the humidity and the end-result is a "room within a room" having a comfortable temperature and suitable humidity and, presumably, proof to invasion from all forms of insect life. This apparatus has already been tried and found adequate It is simple in design and a moderate-sized cubicle can easily be fitted up in an hour. The insulated cubicle itself does a good deal of the work and hence no elaborate air-conditioning plant, which would otherwise be required to deal effectively with a tropical environment, is necessary. This reduces initial expense and lowers running costs to about half a unit of electricity per hour. Moreover, no drastic lowering of temperature is desirable if tropical clothing is worn. The cubicles cost £68 to £100 and the air-conditioning unit £75, and the whole apparatus has the advantage of being portable.

A JEWISH SYMPOSIUM

THE group of Jewish doctors who planned a periodical to deal with Jewish medical history and contemporary problems, and launched it two years ago, have good reason for pride in their second number. "Medical Leaves" (*Chicago: Medical Leaves Inc*, pp. 196, $3) is a happy title, for the contributions are of the most varied character . historical and literary, scientific and political, and, as is natural, much that relates to the Jewish difficulties, social and medical, in Palestine. On the biographical side there is a charming account of the late Prof. Jacob Erdheim of Vienna by a former pupil, Dr. Aaron Arkin, whose enthusiastic eulogy of his master forms a worthy monument. Erdheim was essentially a happy man: successful and beloved in his chosen path, and fortunate in the date of his departure.

In his account of Maimonides, the outstanding genius of the Jewish race in the twelfth century, philosopher, learned scholar, and physician, Dr. ham Levinson, the editor-in-chief, reminds us that his teaching as regards health was so highly valued as to be incorporated among the religious precepts of his people, and were largely responsible for the fact that, when the entire medieval world fell a prey to terrible epidemic diseases, the Jews alone escaped So noticeable was the immunity of the Jews that they were often accused of being responsible for the epidemics In his thesis on the psycho-pathology of Nazism Dr. Hershel Meyer attempts to give a reasoned explanation of the underlying causes of the persecution of the Jewish race in Germany. He believes that the primary factor in the development of modern Fascism is purely economic in nature, but "the Nazi terror, its solemn glorification of murder, its lust for blood, cannot be resolved totally into terms of political economy; events in Nazi Germany definitely point toward a coexistent pathological state of mind, by which the Nazi brand of Fascism was greatly aided and abetted" This pathological state he proceeds to trace to its origin in history, and especially in the history of its Junker class, an aristocracy which has never succeeded in ridding itself of its medieval doctrine of the virtue of the mailed fist He believes that a war is all but inevitable, unless Nazism should collapse economically; but even so "Germany will still need many years of thorough disinfection, many blasts of clean fresh air, many years of mental hygiene, until the virulence of its implanted psychosis will finally abate." Whether it carries conviction or not—and its effect is marred by some pardonable exaggeration—this is a notable contribution to an understanding of the Nazi mind Other articles deal with the various aspects of medical life in Palestine, and the notable advances which are being made in the diagnosis and treatment of the endemic fevers and malaria of the Jewish settlements. They show that with straitened means but with admirable devotion the Jewish medical service is living up to the finest traditions of medicine, and bringing both to their own people and to their Arab neighbours new views of the meaning and the blessings of health.

NUTRITION IN INDIA

A MEETING was held in London last week under the auspices of the Committee Against Malnutrition with Sir Cuthbert Sprawson in the chair, to discuss the nutritional state of the peoples of India

Dr. Margaret Balfour pointed out that whereas the Englishman in times of scarcity can usually fall back on cheaper foods, such as bread and cheese and potatoes, the Indian can only reduce the amount he eats The most urgent need of India, she thought, is attention to the requirements of pregnant and lactating women

Sir John Megaw maintained that heredity plays a relatively small part in producing the poor physique of the peoples of India. From the researches of McCay, McCarrison and Aykroyd it is becoming clear that a deficient diet—deficient in quality even more than in quantity—is the chief cause of the poor physique of most Indian peasants and their proneness to disease Eight years ago returns from doctors in rural areas showed that 40 per cent. of the people under review were well nourished, 40 per cent were poorly nourished and 20 per cent were badly nourished. The diets were especially deficient in high-grade proteins, fats and vitamins The problem of child marriage and of a rapidly increasing population must be examined when one is trying to assess the causes of malnourishment in India. Sir John believed that England would be as depressed as India if girls of 14 were compelled to undertake the perils and responsibilities of childbearing. The people of India should not adopt our social customs wholesale—there is no need to rush from one extreme to another—but we cannot be wrong in trying to save them from a state in which they have

DOCTORS

the strength to struggle for better conditions nor even an aspiration for a higher standard of existence The remedy lies in education in the planning of life, the material foundations of the better life he visualised consist in scientific production, equitable distribution of the fruits of labour, and the regulation of reproduction *India is an invalid whose condition demands* a diagnosis by skilled scientists, followed by rational treatment

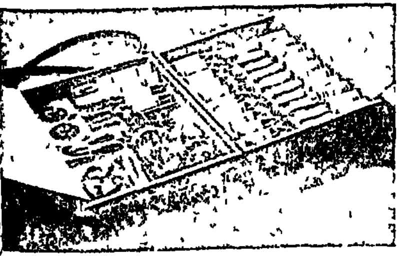
Dr D Curjel Wilson spoke of the work of the Indian National Nutritional Advisory Committee, which has been recently established Indian women are in her opinion beginning to interest themselves strongly in nutrition

Mr N Gangulee, Ph D, formerly professor of agriculture at Calcutta, said his investigations have led him to conclude that in large areas of India there are only two rice bowls to every three mouths And is the rice even in the two bowls nutritious? The highly polished rice in common use is the main cause of beriberi, and the state ought to control the rice-milling industry As early as 1921 the Far Eastern Association of Tropical Medicine proposed the prohibition of milled rice, but few steps in this direction have yet been taken

Among those contributing to the subsequent discussion were Sir Evelyn Howell Prof V Subrahmanyan, Prof J R Marrack, and Dr G G Banerji At the close of the meeting Mr F Le Gros Clark, *secretary of the Committee Against Malnutrition*, spoke of the work done in this country by unofficial and self constituted bodies in bringing before the public the need for improved standards of nutrition A similar part could be played in India by committees, and he trusted that the present meeting would show Indians that the British public is beginning to realise, however slightly, the need for common action

ANÆSTHETIST'S EQUIPMENT IN WAR-TIME

Dr **Ronald Jarman** writes: With reference to my letter on anæsthesia in war-time in The Lancet of April 8 (p 815) the portable case shown in the figure here given has been prepared by Abbott Laboratories Ltd, of Wadsworth Road, Perivale, Middlesex The case is made of ply-wood, covered with khaki cloth It weighs 4 lb 14 oz, *measures* 11 in ×8 in ×3 in and costs 5–5½ guineas depending on the fittings The whole of the interior is lined with washable material and the two lids are padded also



he grooves for the ampoules are lined so as to revent movement and breakage There are two 0 c cm *syringes in metal* containers full of spirit, ach supplied with six intravenous needles, size 1 or 17 The case also contains two mouth pieces, n airway, tongue forceps and a small tourniquet, nd in the space under the large 1 gramme ampoules here is room for a 1 or 2 c cm syringe and emergency drugs The case can be filled and opened apidly, and can be thrown about with a reasonable mount of care without fear of breaking It can ther be slung round the shoulders, or two straps can be attached so that the anæsthetist can carry it on his back or front It would also be possible to put the whole of the contents of the case in a box on a cartridge bandolier round the shoulders

Since the case was designed it has been suggested that two small loops could be fitted on the front of the case to take a Sparklet J CO_2 apparatus (CO_2 resuscitator), as supplied by A Charles King Ltd, of 34, Devonshire Street, Harley Street W 1 Space could also be provided for a container for tincture of iodine and for cotton wool These additions would make the case more useful in ordinary practice as well as in war

TUBERCULOSIS IN FINLAND

The death rate from pulmonary tuberculosis in Finland is one of the highest in Europe, the figure for 1934 being 18 5 per 10,000 inhabitants, compared with 7 4 in England and only 4 6 in Denmark In 1936 meat inspection of cattle in Finland revealed bovine tuberculosis in only 0 02 per cent Tuberculin tests in cattle in the same year showed higher rates, definitely positive reactions being obtained in 0 71 per cent and weak positive reactions in 1 72 per cent The investigations undertaken by Stenius suggested that the conflicting evidence of meat inspection and tuberculin testing might in part be explained by his observation that cattle exposed to infection from open pulmonary tuberculosis in human beings may *become tuberculin positive without developing macroscopic* changes detectable in the course of meat inspection Hence Dr J Pikkarainen concludes (*Nord Med* Jan 28, 1939, p 221) that the positive tuberculin reactions found in Finnish herds do not depend on foci of tuberculosis in the cattle but on the manner in which they react to human infection Since 1935 the Finnish government has systematically waged war on tuberculosis in cattle, and has succeeded in reducing the number of diseased animals to about 2000—i e, only about 0 1 per cent of all the cattle in Finland It is the government's intention to pursue this policy till the disease has been completely stamped out in cattle Meanwhile Pikkarainen has carried out type determinations of 140 samples of tubercle bacilli obtained from human cases of tuberculosis in different organs and at various ages Although he used the latest technique in his determinations, he did not identify one sample as of bovine type

DELIRIUM TREMENS

In spite of the condition having been described by Thomas Sutton as long ago as 1813 Bowman, Wortis and Keiser (*J Amer med Ass* April, 1939, p 1217) point out that little is still known about the ætiology of delirium tremens Because cerebral œdema is often found post mortem recent therapies aim at dehydration when, in fact, generalised dehydration and toxicity are already present in these patients The prodromal disgust for alcohol sometimes observed is often mistakenly regarded as a precipitating cause but Philip Piker has shown that the vast majority of patients develop delirium tremens while still drinking Thus Bowman and his colleagues maintain that alcohol has no place either in prophylaxis or therapy and should be abruptly withdrawn Similarly, mechanical restraints are best avoided as far as possible Of sedatives they think paraldehyde is the best morphia because it masks symptoms and raises intracranial tension, *the* worst Hydrotherapy, properly applied, has a definite value The next step is to readjust the deranged metabolism The brain feeds essentially on dextrose, and this should be abundantly available in the form of orange juice to which vitamin C has been added This especially if insulin is given with it, accelerates the elimination of alcohol In delirium tremens the blood-chloride content is lowered and 2-gramme capsules of sodium chloride should be given four hourly to combat dehydration and acidosis A soft diet containing 3000–4000 calories daily should be given and this should be rich in vitamins A, and

B_1 and C for their effect on the metabolism of nervous tissue in combating secondary infection. These American authors believe that in the absence of œdema cardiac failure or nephritis a high fluid intake—3000–4000 c cm. daily—has a sedative effect and should be forced during the acute phase of the illness. Similarly, high enemas should be given not only to relieve constipation but also to increase the fluid intake. Failure to rule out concomitant syphilis, which was present in at least 10 per cent. of their cases, may have serious consequences, and for this reason diagnostic lumbar puncture is permissible. The common complications include head injuries, fractures, respiratory and focal infections, and finally vasomotor collapse, possibly due to toxic myocarditis and perhaps warranting the routine use of digitalis. The importance of individual psychotherapy during convalescence and after need not be stressed. Before adopting these methods of treatment Bowman and his colleagues had 16 deaths in a series of 92 cases. Since using them, of 65 patients only 3 have died. Although these numbers are too small to be in any way conclusive, a reduction in mortality of 12 per cent. cannot be ignored.

STERILE MARRIAGES

THE *public undoubtedly needs education on the* subject of sterility, for few people know how often involuntarily sterile marriages can be made fertile provided both husband and wife are willing to undergo thorough examination. Dr. Griffith's attempt[1] to explain the procedure and chances of success is not altogether satisfactory, though his book is certainly readable and may lead those anxious for children to seek expert advice. Dogmatic information is offered on some matters which are by no means settled and the notes on pathology are not all accurate. The hormonal aspects of sterility are perhaps overemphasised, but the diagnostic value of endometrial scrapings and B.M.R. estimations is not noted. Again, though the technique of tubal insufflation and lipiodol injection is described, tubal blockage is mentioned only in connexion with the gonococcus. The illustrations of the pelvis after lipiodol injections into the uterine cavity are good. The title of this book is ill-chosen. A family can hardly be said to exist until there are children.

THE LONDON AMBULANCE SERVICE

THE London County Council's ambulance service for accidents and sudden illness in streets and public places, though originally opposed by the House of Lords, the Home Office and the police, continues to render aid, in increasing numbers, to casualties within the county With its 16 stations and 25 ambulances in commission under telephonic control from the County Hall it last year answered 56,318 calls to the site of the accident within (on an average) seven minutes The frequency of the calls depends mainly on the numbers of persons using the streets at a given time; the largest hourly record is between noon and 1 o'clock, Saturdays being the days when the ambulances are most in demand and December the month with the highest total It is natural that the stations centrally situated should receive the most requisitions; that in Bloomsbury registered no fewer than 6801 calls in 1938 The service is now so well recognised and relied upon by the public that the statistics show that, while last year 17,738 calls were received from the police, no fewer than 30,549 were made by the public The proportionate number of cases taken to voluntary hospitals and to L C C. hospitals and institutions is significant; while 18,887 were received by the former 29,623 were taken to the latter It is also worthy of note that removals within twenty-four hours either to the patients' homes or to "other institutions" were more numerous in the case of the voluntary hospitals than the municipal institutions During the past year the emergency service organised by the King Edward's Hospital Fund has received valuable cooperation from the council's service. While it is accidents in the streets or other places for which the service is most frequently resorted to, more than 10,000 cases of illness were dealt with last year, of which 1548 were epilepsy. During recent years the service has been made available for cases of parturition, if accompanied by a doctor, midwife or female friend. This has proved a great boon to women in labour for conveyance to hospital at night when ordinary transport is not available The who can recall the haphazard means of transport of street casualties to hospital before the county council put in operation the Metropolitan Ambulances Act of 1909 can realise the extent to which avoidable detriment to the sufferer has been obviated by the beneficent municipal service.

A HOSPITAL IN CHINA CARRIES ON

WHEN Canton fell to Japanese troops in the middle of October Dr Wong Man, dean of the Sun Yat Sen medical college of Lingnan University, had already left, according to plan, with a contingent of 1 doctors and nurses for the north, where he establish three base hospitals. Dr. William Cadbury, professor *of medicine in the university, remained* behind as superintendent of Canton Hospital, for it was thought it would be easier for the hospital to carry on with a foreigner in charge. During the actual conquest of the city the hospital was closed, but on Oct 31 as soon as the street fires had somewhat subsided it opened its doors and it has remained open ever since. Doctors, nurses, and patients soon found their way to it, and it became the rallying point for all who wanted to give or receive medical help Lingnan University itself agreed to take in refugees and so housed 7000 old men, women, and children Food became scarce and famine threatened. but a relief ship arrived in time from Hong-Kong and help was also given by the American Red Cross and the Brit Fund for the Relief of Distress in China. Volunt workers, some themselves refugees from Europe, ca to help, and Canton Hospital is now staffed by m and women of five or six different nationalities. T urgency of the task of relief of suffering, Dr Cadbury remarks, breaks all barriers of race and cr

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK EN MAY 13, 1939

Notifications.—The following cases of infecti disease were notified during the week: Smallpox scarlet fever, 1001; diphtheria, 799; enteric f 20 (26 "expected"); pneumonia (primary influenzal), 768; puerperal pyrexia, 184; cere spinal fever, 31; acute poliomyelitis, 5; acute p encephalitis, 2; encephalitis lethargica, 3; relap fever, 1 (Whitley U.D.); dysentery, 21, ophthal neonatorum, 119: No case of cholera. plague, typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the L County Council on May 19 was 3151, which included sc fever, 696; diphtheria, 572 (carriers, 27), measl whooping-cough, 1040, puerperal fever, 21 mothers (p babies), encephalitis lethargica, 303, poliomyelitis, St Margaret's Hospital there were 25 babies (plus 11 mot with ophthalmia neonatorum

Deaths—In 126 great towns, including Lon there was no death from smallpox, 1 (1) from en fever, 4 (0) from measles, 2 (0) from scarlet fe 23 (1) from whooping-cough, 18 (0) from diphth 48 (9) from diarrhœa and enteritis under two y and 45 (6) from influenza. The figures in parenth are those for London itself

Twickenham, Middlesbrough and Birmingham each r 2 deaths from whooping-cough Fatal cases of diphther scattered over 11 great towns, Liverpool reporting 5, ham 3, Middlesbrough 2 Birmingham had 5 deaths diarrhœa, Leeds and Bristol each 4

The number of stillbirths notified during the was 261 (corresponding to a rate of 38 p total births), including 55 in London

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[1] The Childless Family, its Cause and Cure By Edward F Griffith, M.R C S London · Kegan Paul, Trench, Trübner and Co 1939 Pp 128 3s 6d

ADDRESSES AND ORIGINAL ARTICLES

DIAGNOSIS AND TREATMENT OF ACUTE APPENDICITIS IN CHILDREN

A REVIEW OF 407 CONSECUTIVE CASES

BY G. GORDON BRUCE, F.R.C.S.

SURGEON TO ROYAL ABERDEEN HOSPITAL FOR SICK CHILDREN AND ASSISTANT SURGEON TO ABERDEEN ROYAL INFIRMARY

DURING the period 1925–39 I operated on 407 children under twelve years of age suffering from acute appendicitis, the majority in the Royal Aberdeen Hospital for Sick Children. Immediate operation was the rule and expectant treatment was carried out in 3 cases only. No case was refused operation. The results are recorded in tables I and II.

TABLE I—RESULTS OF OPERATION ON 407 CONSECUTIVE CASES OF ACUTE APPENDICITIS

Group	—	Cases	Deaths
1	Acute appendicitis without gangrene	206	0
2	Ditto with gangrene	114	0
3	Ditto perforated with local peritonitis* or commencing abscess	76	1
4	Ditto perforated with general peritonitis	47	8
5	Established appendicular abscess	24	0
	Total	407	9 (1·9%)

* The term 'peritonitis' denotes suppurative peritonitis secondary to the rupture of a gangrenous appendix.

TABLE II—CAUSES OF DEATH

	Cases
General peritonitis	5
Pylephlebitis	2
Secondary abdominal abscess	1
Unknown	1

It will be seen that, when the disease was limited the appendix recovery always took place, but in 7 the appendix had already perforated and peritonitis or abscess had supervened before admission hospital. How can we explain this tragic delay in l per cent of cases? Murphy's (1909) original escription of acute appendicitis has long been garded as a classic and has been quoted verbatim countless occasions throughout the surgical world. First pain in the abdomen sudden and severe, imarily referred to the epigastrium, followed by econd) nausea and vomiting, most commonly etween three and four hours after the onset of ain. Third, general abdominal sensitiveness most arked on the right side and more particularly over e appendix. Fourth, elevation of temperature om two to twenty-four hours after the onset of ain." Again Murphy states "Temperature is not bsent in a single infective case in its early stages." lthough such dogmatic statements are doubtless dmirable in general and true in typical cases, they onstitute a danger in the atypical forms of the isease and have led to many errors in diagnosis. low often has a surgeon heard a doctor sadly emark, "I did not think appendicitis possible ecause the vomiting came before the pain" or "I hought I could exclude appendicitis because the hild's temperature was normal"? Thus pain is ot always the first symptom and an unusual onset may be expected in at least 12 per cent. of cases (table III).

TABLE III—MODE OF ONSET IN PRESENT SERIES

Earliest complaint		*Cases*
Abdominal pain—		
Epigastric or umbilical	238	407
In right iliac fossa	114	
Hypogastric	55	
Vomiting		34
Diarrhœa		12
Headache		6
Shivering		5
Drowsiness and listlessness		3

In 1914 Wilkie did much to elucidate the pathology and symptoms of acute appendicitis by recognising two primary acute diseases of the appendix: (1) acute inflammation of its wall, and (2) acute obstruction of its lumen (Wilkie 1931). The former is mild and seldom fatal, the latter is always dangerous with tension gangrene and perforation liable to occur in six to twenty-four hours. In acute appendicular obstruction the appendix may be gangrenous and on the point of rupture and yet the temperature and *the pulse rate may be normal.* Wilkie's description is very different from Murphy's and is not sufficiently known throughout the medical profession. The abrupt onset of severe pain is always ominous and the history of general abdominal pain ultimately settling in the right iliac fossa is almost diagnostic. The absence of other symptoms never excludes appendicitis. The acuteness of both symptoms and signs varies from hour to hour and there may be a brief symptom-free period immediately preceding perforation, but it is only in exceptional cases that pain and tenderness entirely disappear. Very rarely a child may complain of pain only in the left side. This is suggestive of pelvic peritonitis complicating an attack of appendicitis and of an infection spreading upwards from the pelvis to the left of the mesosigmoid. Although trauma and exposure to cold may cause abdominal pain and gastro-intestinal symptoms, both may predispose to an attack of appendicitis. Repeated vomiting is an ominous symptom and often heralds impending gangrene and rupture of an obstructed appendix.

PHYSICAL SIGNS IN ACUTE APPENDICITIS

Although most children look flushed and anxious during an acute attack, many appear in perfect health and a normal temperature is of no diagnostic significance. In doubtful cases the advice to count the pulse rate and to wait to see whether it rises or not is occasionally useful but I have always thought that in the diagnosis of appendicitis too much stress is laid on the temperature and pulse-rate and too little on the state of the abdomen. If the appendix is gangrenous or distended with pus a child's breath may smell of *Bacillus coli* pus.

The abdomen must be examined with the greatest care and most deliberately in order that the slightest degree of rigidity and tenderness may be appreciated. This will be impossible unless a child be comfortably reclining with at least two pillows beneath the head and shoulders to relax the abdominal muscles. It is essential not to hurry. The examining hand must be warm and should be passed gently and lightly over the whole abdomen and over both loins estimating the resistance of the muscles, group by group and side by side. No attempt should be made to press or to elicit tenderness at this stage. After deciding on the state of the muscles, tenderness may be gently sought for, and if at this moment a child slowly flexes the right thigh the case is almost certainly one of acute appendicitis. Tenderness found on deep and rough palpation may be very misleading. Most commonly both rigidity and tenderness are present but they may not be equal in degree, or one may find a complete absence of physical signs. On several occasions I have examined children during the first hour of the attack without finding signs suggestive of acute appendicitis. This fleeting stage, which seldom lasts for more than a few hours, may mimic colic very closely. In fact the earliest pain in appendicitis is probably due to irregular peristalsis in the appendix and terminal ileum, and is entirely splanchnic or visceral in nature. The peritoneum reacts later with the typical tender resistant abdominal wall. If a doctor is in doubt in an early case, as he well may be, he should re-examine the child after an interval of two or three hours Morphia should not be given and on no account should castor oil be prescribed ; for there is no more certain method of hastening the rupture of a gangrenous appendix. Even an enema is not free from risk.

CLINICAL PICTURES

It is a mistake to think of a single clinical picture in acute appendicitis ; there are several, each with its distinctive physical signs.

TYPE 1.—With rigidity and tenderness over McBurney's point in the right iliac fossa, we have the typical book-picture of acute appendicitis. If the appendix lies immediately beneath the abdominal wall, uncovered by bowel or omentum, the physical signs may be limited to an acutely tender rigid area not much larger than a florin (fig 1). Naturally the size of this area will depend on the extent of the peritoneal reaction, and although the appendix be only moderately inflamed, rigidity and tenderness may be elicited far beyond the middle line. On the other hand, an obstructed gangrenous appendix may excite only a slight peritoneal reaction until rupture has taken place.

TYPE 2—If the appendix lies along the lateral wall of the right iliac fossa, the physical signs may be limited to a zone about two fingers-breadth or less parallel to Poupart's ligament (fig. 2) This is a common site of appendicular abscess in cases neglected for three or four days when a mass will be palpable. If a tumour mass be present earlier in the attack, the appendix is probably wrapped up in omentum and may not have perforated.

TYPE 3—Pelvic appendicitis has been said to be the most difficult type to diagnose and thus the most liable to cause acute general peritonitis A child complains of pain low down in the abdomen and may have discomfort in passing urine The latter complaint is seldom made within the first few hours of an attack of appendicitis, in contradistinction to the urinary symptoms of renal and ureteral conditions which are present usually from the first In pelvic appendicitis the appendix lies so far distant from the anterior abdominal wall that the intensity of all physical signs is diminished and the right iliac fossa is often clear ; but in every case without exception there may be found over the lower right rectus muscle a small triangular rigid area which tapers gradually outwards towards the iliac fossa and to a lesser extent across the middle line (fig 3). If this distinctive feature is missed, there are infinite possibilities of a mistake in diagnosis. A rectal examination may confirm the diagnosis of pelvic appendicitis and in late cases may be the only means of detecting a small appendicular abscess.

With the onset of pelvic peritonitis following the rupture of a gangrenous appendix, tenderness and rigidity, although most acute on the right side, will be found to have spread over the whole hypogastrium. For the first time, distension will be seen in the lower abdomen and a vague mass may be palpable above the brim of the pelvis caused by omentum and distended loops of small intestine which form a canopy shutting off the general peritoneal cavity from the infection in the pelvis. Occasionally a pelvic abscess, complicated by a secondary collection of pus spreading up beneath the ileum under both recti muscles, may give a peculiar "midline" picture of rigidity and tenderness If the infection passes beyond the pelvis, signs of general peritonitis appear Now there is no mistaking the acute distress, the bright restless eyes, the signs of overwhelming toxæmia and increasing dehydration, the coffee-ground vomit and the small thready pulse Tenderness spreads up beyond the umbilicus and the whole abdomen becomes tense and distended Even in advanced cases the physical signs are sufficiently acute in the right side to differentiate peritonitis following the rupture of a gangrenous appendix from the rarer forms of pneumococcal and streptococcal peritonitis. If the appendix perforates along the right lateral wall of the pelvis, the inflammatory focus is frequently covered in by the terminal ileum which readily becomes adherent in the pelvis and may be so œdematous and distended that a picture suggestive of intestinal obstruction may be superadded on that of appendicitis.

TYPE 4 *Retrocæcal appendicitis*—All appendices found behind the cæcum may be called "retrocæcal" but the term is generally applied to a sessile appendix closely adherent to the posterolateral wall of the cæcum or ascending colon The right iliac fossa is comparatively superficial but it shelves very steeply into the deep loin recess towards Morrison's kidney pouch. Here a retrocæcal appendix lying high in the loin is far nearer the muscles of the back than the anterior abdominal wall, from which it is always separated by the cæcum or ascending colon and often by coils of small intestine Thus pain in the back is common and the usual physical signs in front are often dull and ill-defined Frequently the acute symptoms tend to subside and are replaced by a lethargic septic state Very little tenderness may be elicited but on bimanual palpation an appreciable fullness may be found in the loin compared with the contralateral side (fig 4) This increases when an abscess is present.

TYPE 5. *High appendicitis.*—The relations of a high appendix are governed by embryonic conditions. There are two varieties : (1) an appendix, sessile and fixed like the retrocæcal type, lying with the cæcum far up beneath the liver often with the terminal ileum adherent in the loin ; (2) a mobile appendix and cæcum hanging free in the upper abdomen with the ascending colon unattached in the right flank. Early in an attack, it may be difficult to differentiate high appendicitis from pneumonia, but in the latter disease there is more respiratory distress and the general picture is out of proportion and not in keeping with the signs of commencing appendicitis Jaundice is not uncommon if the attack has lasted a few days. The physical signs of high appendicitis resemble those present in adults suffering from acute ch cystitis or subacute perforation of a duodenal ulcer (fig 5)

Occasionally the appendix has been found in the left iliac fossa and the possibility of acute appendicitis in a hernial sac *must not be forgotten*

Various tests have been described—Zachary Cope's, Bastedo's, the rebound tenderness test, zones of hyperæsthesia Doubtless they are often positive, but *I mistrust tests On several occasions a positive* rebound tenderness test has proved totally misleading, moreover, is it not a crude way of examining an apprehensive child? The diagnosis of acute appendicitis appears to be particularly difficult in very young children and this doubtless accounts for the greater incidence of peritonitis and the very high mortality as table IV will show

In reading over the case histories it is painfully evident how often castor oil had been prescribed in the peritonitis group and how frequently a child's parents were responsible for the delay in sending for medical advice Nothing but the education of the public in the symptoms and danger of acute appendicitis will help to avert such mistakes in the future Physicians expect too clear a picture! Let me emphasise the importance of the slightest degree of local rigidity and tenderness following the onset of abdominal pain, and the extreme danger of diagnosing intestinal colic enteritis and abdominal influenza, or of considering an attack of appendicitis so mild that immediate operation is unnecessary

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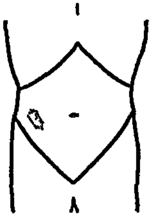
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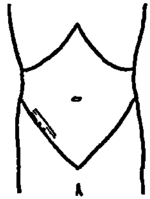
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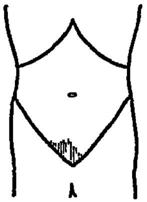
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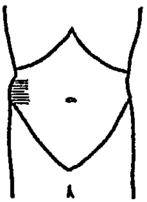
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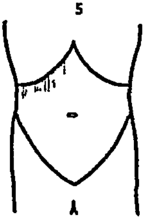

Fig 1—Acute appendicitis Appendix lying in right iliac fossa (Type I)
Fig 2—Acute appendicitis Appendix lying lateral parallel to Poupart's ligament (Type II)
Fig 3—Pelvic appendicitis (Type III) Fig 4—Retrocæcal appendicitis (Type IV)
Fig 5—High appendicitis (Type V)

TABLE IV—AGE IN RELATION TO DURATION OF ILLNESS BEFORE OPERATION, COMPLICATIONS AND MORTALITY

Age in years	Cases	Ill two days or longer	Complicated by peritonitis or abscess	Deaths
1–4	20	15 (75%)	15 (75%)	3 (15%)
4–8	157	65 (41%)	54 (34%)	2 (1%)
8–12	290	108 (37%)	79 (27%)	4 (1%)

A full differential diagnosis is beyond the scope of this paper Many diseases mimic acute appendicitis but few have the distinctive little physical signs of appendicitis which I have attempted to describe

SURGICAL TREATMENT

Experience should enable a surgeon to foretell before operation the position and the pathological changes in the appendix and its surroundings An accurate diagnosis is the first step in surgical treatment Then a surgeon can decide if operation should be performed at once or delayed for a few days, which incision should be made whether the appendix should be removed or whether simple drainage is to be preferred Most children with acute appendicitis *should be operated on without delay*, the exceptions are those who come after an illness of two or three days with unequivocal evidence of localisation—i e, when a mass is palpable along the parietal abdominal wall or in *Douglas's pouch* and when (and this is most important) the rest of the abdomen is soft and lax and free from any sign of peritoneal reaction In these the Oschner Sherren treatment is indicated I do not agree with Coller and Potter (1934) who maintain that cases showing evidence of a generalised peritoneal reaction should be treated conservatively until recovery or abscess occurs, but it is possible that a profoundly ill and seemingly moribund child suffering from general peritonitis acidosis and extreme dehydration, might be benefited by intravenous saline, rest and warmth and by postponing operation for a few hours

Nitrous oxide and oxygen supplemented by Novocain infiltration is the ideal anæsthetic When a child is fully anæsthetised, it is advisable again to palpate the abdomen because the presence of a mass, previously undiscovered, may show that the original focus is already walled off from the general peritoneal cavity Two assistants are always better than one and the easier an operation is, the more gently and speedily will it be performed Although speed is doubtless of less importance than gentleness and accuracy, quickness in operating is essential in a dangerously ill child

I have never pinned my faith to any one incision and would be loth to follow the recommendation from certain clinics in America that the McBurney incision should be made in every case Like all the best things in life the operation of appendicectomy needs a little planning! The McBurney incision is ideal if the diagnosis is certain, if the appendix lies immediately beneath the abdominal wall in the right iliac fossa, and if the operation is likely to be a simple one It is so easy to withdraw a mobile cæcum and appendix through a small muscle splitting incision, but I cannot imagine anything more dangerous than blunt dissection with the finger in attempting to elevate a fixed, gangrenous appendix through such a limited space This happens too frequently in indifferent surgical clinics Too often the appendix is ruptured, the retroperitoneal tissues torn and suffused with blood hæmostasis is inaccurate, and the stage is set for general peritonitis abscess, and ileus In decrying the universal choice of the

McBurney incision because of insufficient exposure, I am fully aware that the incision may be extended downwards through the sheath of the rectus muscle and upwards by cutting across the internal oblique and transversalis muscles Grey Turner's modification of the McBurney incision, in which all the muscles are divided obliquely, gives excellent access to an appendix lying far out in the loin above the level of the anterior superior iliac spine But there are risks in operating through small incisions, as the following case will show:—

A boy, aged 10, was admitted to the Royal Aberdeen Hospital for Sick Children in October, 1936. On the evening before admission he was seized with acute abdominal pain and he vomited several times. Rigidity and tenderness were present over the hypogastrium and right iliac fossa. Acute appendicitis was diagnosed and the abdomen was opened through a McBurney incision. The appendix, which looked red and swollen, was removed. When preparations were being made to close the abdomen, a bubble of gas was seen to rise from the pelvis. This aroused my suspicions and on exploring the pelvis I found a large, black gangrenous Meckel's diverticulum on the point of rupture. The inflammatory changes in the appendix had been of a secondary nature.

"We tread on thin and slippery ice."

Suitable exposure is the keynote of successful surgery. If I suspect that the appendix lies high in the abdomen or low in the pelvis, I prefer a paramedian incision, especially if a child has been ill for a few days and I anticipate a gangrenous appendix and technical difficulties.

TABLE V—MCBURNEY *v* PARAMEDIAN INCISION

—	McBurney or Grey Turner modification		Paramedian incision	
	Cases	Died	Cases	Died
Acute appendicitis without gangrene	134	0	72	0
Ditto with gangrene ..	59	0	55	0
Ditto with local peritonitis or commencing abscess ..	24	1	52	0
Ditto with general peritonitis	11	2	36	6
Established appendicular abscess	15	0	9	0
—	243	3 (1 2 %)	224	6 (2 7 %)

Although table V appears to favour the McBurney incision, it will be seen that the McBurney has been chosen for the more simple cases while the paramedian has been employed in most of the cases of peritonitis. Doubtless a Battle's incision, if used intelligently, would give equally satisfactory results; but I would again emphasise that much depends on choosing the most suitable incision to meet the state of affairs expected in each case

After the abdomen has been opened, the surrounding coils of small intestine are carefully walled off with moist gauze strips and the appendix is removed under direct vision. Nothing varies so much in surgical clinics as a surgeon's idea of gentleness, and the advice of Socrates might apply to all of us. Are we as gentle as we think? If the appendix is gangrenous and adherent it should not be touched by the finger, and no attempt should be made to elevate till it has been released by dividing with a knife or pair of scissors the various strands of tissue which bind it down to the surrounding structures If the cæcal wall is healthy, the base of the appendix is ligatured and inverted by means of a purse-string suture followed by a letter N stitch No trouble has ever arisen from the inverted stump When the wall of the cæcum is inflamed and friable, ligation of the base without further suturing has proved perfectly safe if the wound is drained Sometimes the appendix is most easily removed by first severing its attachment to the cæcum. I deliberately raise and inspect the terminal ileal loop when it is adherent in the pelvis This manœuvre combined with gentle and accurate operating is in my opinion the greatest safeguard against postoperative ileus, a complication noteworthy for its rarity in the present series of cases

Prophylactic enterostomy is seldom if ever indicated There is no risk in separating coils of small intestine which lie gummed together in the vicinity of an early perforated appendix and, unless the surrounding area is most carefully inspected, localised collections of pus in the pelvis, in the left iliac fossa, and along the right paracolic gutter are liable to be missed and will be responsible for many abscesses which are supposed to form after operation. Where the appendix is gangrenous or perforated all purulent fluid is removed by suction and two rubber drainage tubes are inserted down to the infected area from which the appendix has been removed. Drainage is rarely satisfactory through stab wounds.

TREATMENT OF APPENDICULAR ABSCESS

There are two types: (1) the recent abscess 12-24 hours old, a local collection of pus lying round a perforated appendix and walled in by omentum and contiguous loops of bowel which are only loosely gummed together; (2) the established abscess of a few days' duration when the surrounding structures are densely adherent In the first it is easy to remove the appendix and this is probably the correct treatment, in the second appendicectomy may be very difficult without inflicting a degree of trauma which may precipitate serious trouble in the future.

There are few more dangerous and ill-timed abdominal operations than the rough removal of a gangrenous appendix complicated by abscess As Wilkie has said, "Honesty in reflection will bring to the mind of most surgeons cases of this order which they would willingly forget" Simple drainage is indicated and the appendix can be removed in two or three months When the inflammatory reaction has reached the abdominal wall, a muscle-splitting approach should be made down to the abscess, and after a little pus has been aspirated with an exploring syringe, a narrow-bladed scalpel should be passed along the needle into the abscess It is dangerous to force a blunt Mayo's scissors along the needle track because of the risk of rupturing the abscess into the peritoneal cavity. If the abscess is gently explored with the finger, a concretion which may have escaped from the appendix can often be found and removed. If the abscess appears to be too deep to be tapped in the usual manner, it may be reached by a retroperitoneal approach such as one makes in exposing the lower end of the right ureter; or an abscess lying deep in Douglas's pouch may be drained through the rectum or vagina

In the present series there were 24 cases of established appendicular abscesses, 11 of which were treated some time ago, perhaps foolishly, by appendicectomy and drainage, and 13 more sensibly in recent years by drainage only. With the exception of

1 child who was suffering from a concurrent pneumonia, all were operated on as soon as possible Although it is probably safe to wait two or three days before draining an abscess, the risk of such complications as pylephlebitis and fæcal fistula increases with delay

POSTOPERATIVE TREATMENT

After operation, recovery! The first can be performed expeditiously, the second takes time In gangrenous appendicitis with peritonitis, the removal of the appendix with drainage is but the first step in treatment and is of little avail unless a child has sufficient resistance to defeat the virulent infection still active in the peritoneal cavity During this phase, fluid, warmth, rest and sleep are of vital importance and any meddlesome interference in the way of local or general treatment will diminish the chances of recovery I know of no contra indication to heroin in suitable doses Most children require gr 1/25–1/12 at least three times in twenty four hours The water balance must be maintained, and if a child can drink without suffering from sickness, pain or abdominal distension, ample fluid should be allowed by the mouth Rectal saline is given for the first few days If the abdomen remains distended and if persistent vomiting points to a threatened ileus, nothing whatever should be given by the mouth, the stomach should be kept empty by means of an indwelling duodenal tube, and fluid should be provided by continuous hypodermoclysis I have no great faith in intravenous saline unless there is an urgent need for fluid Too often intravenous saline is given for shock, or profound infection, when the indications are far from clear If a child can drink water freely without abdominal pain or distension, milk can soon be added

A small soap and water enema is given on the second or third day An aperient is never allowed until complete recovery has taken place, evidenced by the appearance of the patient and a soft, lax abdomen The bowels will move in their own time when the acute reaction within the abdomen subsides An attempt to whip up peristalsis is most unwise and is more likely to precipitate ileus than to produce a bowel motion The Fowler position is used as a routine Large fomentations over the whole of the abdomen and both loins appear to aid drainage If one of the two drains is removed on the third day, free drainage is provided for along the side of the remaining tube which is shortened daily after the fifth day I have had no experience of sulphanilamide in the treatment of acute appendicitis but Graham (1938) claims to have cured 2 cases of appendicular pylephlebitis with this drug

POSTOPERATIVE COMPLICATIONS

Excluding the fatal cases already noted in table I the postoperative complications were as follows —

Pneumonia	4	Residual abscess	2
Empyema	1	Ileus	1
Subphrenic abscess	2	Pulmonary embolus	1

A pulmonary embolus is very rare in a young child

A girl, aged 11 was admitted on July 5 1934 suffering from gangrenous appendicitis and a small abscess She was treated by appendicectomy and drainage, and was discharged healed in fourteen days Six days later she was seized with pain in the right side, gasped for breath became cyanosed and suffered from acute dyspnœa for several hours A gradual improvement took place, but in a few days an empyema became manifest requiring rib resection and drainage

The fact that there were only 2 residual abscesses in 467 cases of acute appendicitis (an incidence of 0 4 per cent) tends to confirm the value of drainage in septic cases It is interesting to contrast the figures (3 3 per cent in 2126 adult cases) of Sworn and FitzGibbon (1932), who are somewhat sceptical of drainage The only patient with ileus recovered with the aid of an indwelling duodenal tube and continuous drip saline after being very seriously ill for five days Fæcal fistulæ have *not* appeared in the present series They should be regarded as relics of the past due to sloughing of the cæcum or ileum secondary to suppuration or to trauma inflicted at operation Drainage alone does not cause fæcal fistulæ

In cases of postoperative pyrexia it is advisable to examine the chest, the abdomen in general, and the subphrenic spaces by screening In very toxic cases a pure growth of *Staphylococcus aureus* may be isolated from the blood Other diseases unrelated to appendicitis but prevalent in children, such as scarlet fever and otitis media, should not be forgotten If the abdominal incision refuses to heal, a search should be made for a distant untapped focus of suppuration This retards healing as Carrel (1924) pointed out many years ago

CASE MORTALITY

A death rate of 1 9 per cent may be compared with others recently recorded (table VI)

TABLE VI

—	Cases	Percentage mortality
Ladd (1938)	632 (C)	3 5
Maes Boyce and McFetridge (1934)	250 (C)	7 6
Keyes (1934)	380 (C)	7 8
Aird (1938)	400 (A and C)	1·0
Nuttall (1934)	551 (A and C)	2 5
Raw (1930)	619 (A and C)	2 5
Weril and Wallace (1934)	6000 (A and C)	4 5
Turner (1938)	7320 (A only)	4·0

C = children A = adults

CONCLUSIONS

(1) 467 consecutive cases of acute appendicitis in children were operated on with a mortality of 1 9 per cent

(2) Immediate operation is advisable in children

(3) It is essential to diagnose the existing state of affairs before opening the abdomen, and to operate quickly, gently and accurately

It is a pleasure to acknowledge my indebtedness to Drs Elisabeth M Williams and Dorothy I Mortimer for their help in the preparation of this paper, and to Dr D Dawson for his excellent diagrams

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THE "APPENDIX MASS"

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It is a common occurrence for most of us to meet people who express dogmatic opinions about subjects of which they have no first-hand experience This is to some extent explained by the innate conservatism characteristic of the human mentality. On many occasions I have discussed the treatment of the appendix mass with surgical friends and colleagues. Almost all of them who treat these cases by immediate operation admit that they have never given delayed treatment a trial, yet they stoutly affirm their conviction that an emergency operation holds out the best prospects of safety for the patient. My early training ignored any other procedure than immediate operation After returning from the late war I was appointed surgical registrar to a large teaching hospital, where, to my surprise, I found that some cases of late appendicitis were not treated by emergency operation. This heresy, as I then thought it, demanded investigation, and my conversion to expectant treatment followed automatically when I compared the progress of cases treated by the two methods in the same hospital.

It may be well to consider briefly the clinical features of the appendix mass. Although pathological changes do not necessarily synchronise with the clock, most cases present themselves 48 hours or more after the onset, and show a variable elevation of temperature and pulse Three quadrants of the abdomen are relatively normal, but there is tenderness, rigidity or a lump in the right iliac fossa or right loin, or a tender mass is palpable on rectal examination. The appendix mass is due either to local peritonitis or, in the later stages, to abscess formation

IMMEDIATE OPERATION OR EXPECTANT TREATMENT ?

The surgeon has the choice of two lines of treatment in dealing with the appendix mass If immediate operation is undertaken removal of the appendix is usually unwise and often difficult or impossible. Unless the appendix happily presents itself, searching for the organ is liable to separate protective adhesions and spread infection, which increases toxic absorption Congestion and friability of tissues add to the difficulties of the operation, and the insertion of a drainage-tube, with its attendant evils, is usually necessary. On analysing combined statistics published for some of the teaching hospitals the mortality of immediate operation in the case of an appendix mass is found to be 6 per cent. I am aware that individual surgeons of great experience have published their personal results which show a much lower mortality (Nuttall 1935) On the other hand, the surgical amenities in small provincial and cottage hospitals are below the standard of those in town or city hospitals, so that the unpublished results from these sources would probably disclose a mortality of over 6 per cent. If it were possible to compile statistics of immediate operation on the appendix mass from all sources, therefore, the total mortality would probably be at least 6 per cent

The alternative to immediate operation is expectant treatment The patient is nursed in the Fowler position, fomentations are applied locally to relieve pain, and a constant watch is kept on the pulse, temperature, and changes in the character of the mass. Until recently a small amount of fluid was administered by mouth, a procedure that was physiologically unsound, for the entry of fluid into th stomach causes relaxation of the ileo-cæcal valv and consequent local peristalsis This danger is no obviated by the continuous intravenous infusion o saline and glucose, which has done much to safegua the patient during the phase of expectant treatme Anti-gas-gangrene serum is administered so as t tide the patient over the period when his immunit is low. If the patient is apprehensive or nervous a moderate dose of Omnopon may be given at th beginning of expectant treatment This quietens peristalsis and allays anxiety, especially if intraveno infusion is necessary, and its effect will have subside by the time the next examination is due.

It is generally agreed that expectant treatment i not suitable for children and the aged. In the ca of children an accurate history is difficult to obtai and the mother has usually administered a purgativ while in the aged, as Hermon Taylor (1935) ha emphasised, gangrene develops rapidly and th patient's resistance is low

If expectant treatment is adopted the case progresses in one of three different ways (1) The puls and temperature fall and the localised inflammatio resolves In the combined statistics from vario sources 65 per cent. of cases subsided The appendi is removed three months later, when the patient enjoy the benefit of a clean operation The freedom fro adhesions is remarkable, and the mortality negligib

(2) An abscess forms, this happens in abo 25 per cent of cases An abscess is no cause fo panic, for it indicates that the resistance of th patient has arrested the spread of infection. A Rayner (1933) states, "if the mass becomes converte into an abscess the patient has gained rather tha lost by the delay." Also the majority of statisti show that the most dangerous time for operati interference is from the third to the fifth day, whe immunity to infection is low. If the patient can b tided over this dangerous period operative interferenc if such is needed, is less likely to cause spreadi infection, for not only is the resistance improvi but the pus is less virulent. If an abscess is diagnose expectant treatment is still adopted, and it is usef to outline the margin of the abscess with silver sti on the abdominal wall, so that its progress can b estimated with accuracy. The abscess may requi drainage for two reasons · (a) Increase in size, owi to the risk of rupture into the peritoneal cavity Usually an abscess ruptures into the bowel an spontaneous cure results, but it is unwise to awa this natural method of relief. (b) A slow absorptio of the abscess. Visceral degeneration is a possib consequence of prolonged toxæmia, and drainage o the abscess shortens the period of disability.

(3) The third possibility is that operation become imperative owing to exacerbation of pain, increasi local rigidity, or elevation of pulse and temperatur Expectant treatment must be abandoned in abo 10 per cent. of cases, but this figure will be reduce when intravenous infusion is adopted to the exclu of any fluids whatever by the mouth. It is th failure of expectant treatment in this small minori that unfortunately causes surgeons to hesitate t adopt it. However, even in these cases in which operation becomes a necessity, the mortality, as based o 77 cases from the London Hospital (Love 193 was only 6 5 per cent , so that little was lost by th delay. It must be remembered that even if dela has allowed local inflammation to spread, some compensation accrues in that the patient has had th benefit of physical rest and physiological repose i his alimentary canal. As Sir James Berry wrote

1922, "a few days' delay often puts the patient into a more favourable condition for operation if that *should prove necessary* "

PROS AND CONS OF POSTPONING OPERATION

A summary of the results of expectant treatment shows an average mortality of under 3 per cent Some of the criticisms levelled at this procedure are as follows It is said that public opinion may be influenced, so that medical assistance might not be called in immediately No exponent of expectant treatment condones delay in summoning surgical advice Districts in which the virtues of expectant treatment are preached are said to show an unduly high mortality for appendicitis, owing to such delay This is not a result of the treatment but is due to faulty teaching and neglect in emphasising that expert surgical advice and supervision are necessary at every stage of acute appendicitis Further, it is said to be impossible to judge the condition of the appendix unless the abdomen is explored It is equally impossible to estimate the position of the appendix, which may be inaccessible in the presence of acute infection, and it is also impossible to assess the resistance of the patient, which may be quite capable of walling off infection and allowing subsequent resolution Also it is generally accepted that necrosis of the appendix does not in itself constitute a danger to life, except in so far as it may cause spreading peritonitis

Delayed treatment imposes a tax on the courage and judgment of the surgeon, and psychologically it is much easier to operate at once than await the result of delayed treatment However, these considerations are of no moment if delay is repaid by fewer complications and a diminished mortality

Postoperative complications are said to be more frequent if treatment is delayed, but I can find no *justification of this statement in any statistics in* which the two methods of treatment are compared To take a typical example, Sworn and FitzGibbon (1932) analysed the cases with an appendix mass admitted to St Thomas's Hospital between 1920 and 1929 and found that immediate operation was followed by postoperative complications in 17 1 per cent of cases, whereas only 6 76 per cent of those not operated on developed complications

With regard to the relative mortality of the two lines of treatment, I have assessed the average mortality of immediate operation at 6 per cent, while that of expectant treatment is under 3 per cent Experienced surgeons have published their personal statistics showing a low mortality with immediate operation Doubtless their exceptional skill enables them to operate with exceptional delicacy and judgment They have learned how much pressure should be applied to an adhesion, and the degree of traction which can be applied with safety to the caecum As Zachary Cope (1936) writes, "When the operator has great experience and judgment complications are uncommon " However, considering the question from a broader point of view, it is the less experienced surgeon who operates on the majority of cases a contention which is supported by time periods and figures quoted at the end of this article If the task of the junior surgeon can be simplified his patients will reap the benefit It requires little experience to decide whether a pulse is rising whether a lump is increasing in size, or a zone of tenderness is extending As three out of four cases treated expectantly completely subside the emergency operations are reduced to a quarter, many of which demand merely the introduction of a drainage tube

RESULTS

I have not yet read of any exponent of expectant treatment who has reverted to immediate operation On the other hand, surgeons often express their satisfaction with the results of changing over to expectant treatment For example, Patterson (1936) states that "the mortality of operations on appendix abscess was 8 6 per cent, particularly high if operated on between 50 and 72 hours This led to a change of policy in our treatment of appendiceal abscesses, so that now, if an abscess is diagnosed, operation is delayed until a period when adequate walling-off has occurred " Again, Sherren (1925) wrote after over twenty years' experience at the London Hospital, "The only change I have made has been to greater conservatism and more patience in dealing with cases of appendix abscess " However, generalisations regarding statistics are often misleading, so I quote below my own experience with these two lines of treatment during two periods of my surgical career

RESULTS OF TREATMENT IN CASES WITH A LOCAL APPENDIX MASS

—	GROUP I June 1920–June 1922	GROUP II 1933–38	
	Immediate operation	Immediate operation	Expectant treatment
Total cases	124	12	104
Deaths	9	2	3
Mortality (per cent)	7 3	16 7	2 9

It will be noted that the second group includes 12 cases treated by immediate operation Of these cases 11 were at one or other extreme of life so that expectant treatment was inadvisable, the other was in a remote country nursing home where surgical supervision was impossible, and domestic conditions precluded transport to a more accessible centre My own experience, therefore, is that with the adoption of expectant measures the mortality has fallen from over 7 to under 3 per cent

SUMMARY

In cases with an appendix mass, due either to local peritonitis or abscess, immediate operation is often difficult and shows an average mortality of 6 per cent or more

Expectant treatment requires careful medical and nursing supervision and includes the Fowler position, fomentations, continuous intravenous saline and glucose, and anti gas gangrene serum Of cases so treated two thirds subside and the appendix can be removed three months later, in a quarter an abscess forms, which must be drained if it enlarges or is slow to be absorbed, and the remainder require surgical intervention because of local or general signs of exacerbation The average mortality of expectant treatment is under 3 per cent

Expectant treatment is unsuitable for children and old people, but should be generally adopted in other cases

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TESTOSTERONE PROPIONATE

ITS EFFECT ON THE HISTOLOGY OF PROSTATIC ENLARGEMENT IN MAN

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The belief that senile enlargement of the prostate in man is in some way connected with an endocrine imbalance has been expressed by many writers. Proof of such a belief is lacking, though analogies have been drawn and some suggestive indirect evidence has been put forward Lacassagne (1933) in mice, de Jongh and Kok (1935) in dogs, and Parkes and Zuckerman (1935) in primates have shown that the administration of œstrogens causes enlargement of the prostate, and that this effect can be prevented by the simultaneous administration of androgens (Zuckerman and Parkes 1936). The histology of the enlarged prostate produced in monkeys by the injection of œstrogens is unlike that usually found in senile enlargement in man In monkeys, apart from a general increase in size, the most pronounced changes are a fibromuscular growth and stratification of the uterus masculinus, the acini and tubules being but little affected Very rarely in man a somewhat similar picture is found ; more usually the glandular elements are most involved A full discussion of the experimental evidence and its bearing on the human disease has been published by Zuckerman (1936).

The therapeutics of prostatic enlargement, on an endocrine basis, have gone through several unfortunate phases. Castration, originally advocated by White (1893), has fallen into disrepute, and the Steinach operations lack experimental support. In recent years the administration of androgens has been enthusiastically accepted by many workers as a valuable therapeutic measure. Results have been judged by the symptoms of the patient, by estimation of the residual urine, by the size of the prostate, gauged by rectal palpation, and by cystoscopy The published reports are favourable in nearly every instance. A control series of cases has been carefully investigated by Clarke (1937), who found that, when there was a minimum of instrumentation and no treatment of any sort was given, there was yet great variability in the course of the disease, and often there was apparently spontaneous cure It seems probable that many of the reports of favourable results, following the administration of androgens to patients with prostatic enlargement, are open to criticism and may be misleading

The dosage of androgenic substance commonly given raises another difficulty Zuckerman and Parkes (1936), using a rhesus monkey weighing 3 kg., reversed the changes produced by 100 μg of œstrone daily by the simultaneous injection of 5 mg of androstanediol and 100 μg of œstrone daily, continued for a further thirty-nine days. To treat prostatic enlargement in man, van Cappellen (1936) used up to 20 capon units (equivalent to 0·66 mg of androstanediol) daily Among many others, Cary (1938) advocates 5 mg. of testosterone propionate every fourth day for six injections Walther and Willoughby (1938) used somewhat similar dosage, though Laroche et al. (1937) gave 20–40 mg a day in a few cases.

It was felt that more objective evidence might be obtained by observing the microscopical appearances of enlarged human prostates before and after the injection of large doses of testosterone propionate. In view of the quantity of this substance used and the difficulty of finding suitable subjects, it is considered justifiable to record observations on a single case.

CASE-RECORD

A labourer, aged 53, complained that for three years he had been getting up at night to micturate. For six months there had been frequency during the day, a small amount of urine being passed every hour. There was sometimes difficulty in starting the act, and the stream was poor. A stinging sensation, referred to the tip of the penis, had been noticed for three weeks. A few days before admission there had been slight hæmaturia, with the passage of several blood-clots. He never had acute retention of urine. He also complained of dyspeptic symptoms.

There were no previous illnesses. No abnormality was found on general examination Rectal examination revealed moderate enlargement of the prostate, the lateral and median grooves being normal and the surface smooth The residual urine was 2½ oz.

Cystoscopy showed a bladder with a good capacity and moderate trabeculation of its walls There was considerable enlargement of the intravesical portion of the prostate, especially on the right side. The urine contained a moderate number of pus cells but was sterile on culture. The blood-urea was 24 mg. per 100 c.cm , and intravenous pyelography showed both kidneys to be excreting normally.

On Oct. 17, 1938, the bladder was opened, and considerable enlargement of the intravesical portion of the prostate was found, the lateral lobes being moderately enlarged. An attempt was made to judge the size of the gland by palpation. From the "middle" lobe a piece of tissue about 1×1×2 cm. was excised with scissors. A de Pezzer's catheter was inserted and the wound closed

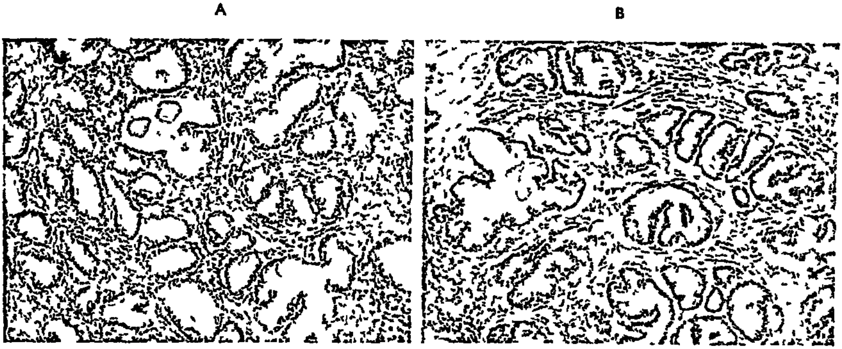
Injection of testosterone—From Oct 18 to Nov. 20, 1938, 100 mg. of testosterone propionate in oil was injected daily—a total of 3400 mg. over thirty-four days. The symptoms produced by this heavy dosage were comparatively slight. They will be published in detail elsewhere.

Since a suprapubic drain was left in for this period, the effect on urinary symptoms could not be judged. Recovery from the first operation was uninterrupted. Infection of the bladder was slight.

On Nov. 21 the bladder was again opened, and by palpation it was estimated that the prostate had decreased in size It was judged that the gland was now only a third of its previous bulk The prostate was enucleated with considerable difficulty.

Recovery from the second operation was uneventful and the patient, seen three months later, had no frequency and was free from other urinary symptoms.

Histological report on specimens of prostate before and after testosterone propionate (Prof. J. H. Dible)—The examination of these two specimens of prostate does not reveal any unequivocal difference between them. In the specimen taken before the administration of testosterone propionate there is included only a single adenomatous focus, and in this the glands are rather less plicated and rather more open than they are in most of the comparable foci seen in the specimen which was removed after treatment with hormone. This difference is, however, very slight and may be entirely due to the fact that the single nodule in the smaller specimen was not representative of most of such nodules. Having regard to the great variability of the picture ordinarily seen in the different parts of the senile enlarged prostate, and to the trauma to which the gland is exposed in the operation for its removal, the conclusion is reached that these two specimens show no significant differences in their histological structure.



Photomicrographs of sections of prostate removed by biopsy A, before and B, after treatment with testosterone (hæmatoxylin and eosin, × 60)

COMMENT

The results of this observation appear to show that no striking change is produced in the histology of an enlarged *prostate after the injection of massive doses* of testosterone propionate This is only a single observation, and both the dosage of testosterone and the period of administration may be inadequate So far as is known, the dosage is greater than has been given by most other workers, and, apart from any possible direct action on the prostate, such a dose (100 mg a day) has been shown to depress one function of the anterior pituitary, which is probably associated with the gonadotropic hormone, in the case of a young male with acromegaly (Schrire and Sharpey Schafer 1938) It has been suggested by Champy and Coujard (1937) that the effect of androgens in relieving symptoms of prostatic obstruction may be due to an action on plain muscle In the case reported here suprapubic drainage precluded any observations on such a possible action The apparent decrease in size of the gland cannot be regarded as necessarily due to the injection of testosterone propionate It is well known that an enlarged prostate may apparently decrease in size either spontaneously or after suprapubic drainage of the bladder

Finally, a plea is made for more objective methods of judging the effect of androgens in cases of prostatic enlargement, and for consideration of Clarke's (1937) series of controls, before assessing results by clinical methods alone

SUMMARY

In a case of prostatic enlargement the histology of the prostate was studied before and after the injection of 100 mg of testosterone propionate daily for thirty four days No significant change was observed

We thank Prof J H Dible for his opinion on the microscopic sections, the chief medical officer for the county of London for permission to publish the case-record, and Ciba Ltd. for generous supplies of testosterone propionate

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PROGNOSIS IN ACUTE NEPHRITIS IN CHILDHOOD

A FURTHER NOTE

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In 1931 a follow-up study was carried out by one of us (Tallerman 1932) on a series of 27 children who had had an attack of acute nephritis in the three year period 1927–29 inclusive, 25 of them had survived, and 2 had died during the acute attack At the time the report was made, only 4 of the 25 survivors were considered to show any evidence of persisting renal damage The present note records a second follow up study of the original series of cases carried out after a minimal period of some eight years had elapsed from the time of any of the original attacks of acute nephritis

FIRST FOLLOW UP EXAMINATION

In the first review of these patients the degree of recovery was assessed after a clinical examination, including estimation of blood pressure and certain investigations had been carried out These latter consisted of analysis and microscopical examination of an early morning non-catheter specimen of urine, estimation of blood urea and the phenolsulphon phthalein-excretion and urea-concentration tests. Judged by these criteria the degrees of recovery were classified, on a critical and conservative basis, under the following headings:—

Complete recovery: clinical condition, urine, blood-urea, and tests of renal function all normal.

Recovery: clinical condition, blood-urea, and tests of renal function normal, but a cloud of albumin present in the urine, which, however, contained no casts or abnormal cells.

Probably complete recovery: clinical condition, urine, blood-urea, and urea-concentration test normal, but excretion of phenolsulphonphthalein diminished.

Renal damage: evidence of renal impairment.

The results were as follows:—

	Cases
Complete recovery	12
Recovery	6
Probably complete recovery . .	3
Renal damage	4
Total	25

SECOND FOLLOW-UP RESULTS

Between November, 1937, and June, 1938, a similar follow-up study was undertaken All the original 25 patients who had survived were sent for, but only 16 *attended*. Of the 9 who defaulted 7 could not be traced, and 2 were unable to come up for re-examination on account of their work but were apparently in perfectly good health The same investigations were made now as in the previous study, and a similar classification of the findings was adopted. The accompanying table shows the results, which may be summarised as follows:

	Cases
Complete recovery	5
Recovery	8
Probably complete recovery	1
Renal damage	2
Total	16

It will be seen that 10 of the 16 patients re-examined have changed the category in which they were originally placed.

RESULTS OF FOLLOW-UP OF 16 CHILDREN SOME EIGHT YEARS OR MORE AFTER ACUTE NEPHRITIS

Original case no*	Sex	Present age	Former result	Present abnormality	Present result
2	F	15	C R	Cloud of albumin in urine	R
3	F	18	C R	" " " "	R
4	F	13	C R	Cloud of albumin and occasional red cells in urine	R
6	F	15	C R	Nil	C R
9	F	16	R	Trace of albumin in urine	R
10	M	15	R	History of further exacerbations of nephritis in March and May, 1933, and June, 1934 Aortic 2nd sound accentuated B P 125/90 Urine · S G 1 007, heavy cloud of albumin Blood-urea 0 129% Urea-concentration up to 0 96 per cent only P S P · only a trace excreted	R D
12	M	13	R	Nil	C R
13	M	18	P C R	Trace of albumin in urine	R
14	F	13	C R	Nil	C R
15	M	16	? R D	Said to tire easily and has exercise restricted No abnormality in urine	C R
16	M	13	C R	Nil	C R
17	F	12	C R	Trace of albumin in urine	R
18	F	11	Some R D	Urea-concentration up to 2 3 per cent	? R D
21	M	12	C R	Trace of albumin in urine	R
22	F	13	P C R	Tachycardia; B P 150/90; no other abnormality B P and tachycardia thought to be nervous	P C R
23	F	12	P C R	Trace of albumin in urine	R

* See *Lancet*, 1932, 2, 66

All the patients were in good health and showed no abnormal symptoms, except in the 3 cases where it is specifically stated.

C R = complete recovery, R = recovery; P C R = probably complete recovery; R D = renal damage.

COMMENTS

The number of cases classed as "complete recovery" has apparently decreased since 1931 An important point to note in this connexion, however, is the fact that, of the 8 cases now classified as "recovery" on account of a cloud of albumin in the urine, 4 were girls over the age of 12 years, who had formerly shown no abnormality Since the urine examined was a non-catheter specimen, the source of the albumin may well have been vaginal rather than renal. It is possible, therefore, that these 4 cases should really belong to the class "complete recovery." One of these girls (case 4) showed an occasional red cell in the urinary deposit, but this, in view of her age and of the absence of symptoms and of urinary casts, was regarded as of no real significance

Case 10 was formerly classed as "recovery" on account of the findings being normal except for a cloud of albumin in the urine This boy now has considerable impairment of renal function He was, however, readmitted to hospital in March, 1933, and was *then found to have definite* renal damage A diagnosis of subacute nephritis was then made, and he has had acute exacerbations with hæmaturia since

Case 18 was formerly thought to have some renal damage, on account of an impaired excretion of phenolsulphonphthalein and the presence of a trace of albumin in the urine. She remains still in the class of "renal damage" on account of a slightly diminished urea-concentration, although the other findings are now all normal The evidence of renal damage here is perhaps more of academic than of real significance.

Case 13, a boy formerly classed as "probably complete recovery" owing to a slight impairment of excretion of phenolsulphonphthalein, now shows a trace of albumin in the urine, a finding that gains significance because of his sex.

In delivering a prognosis critical consideration must always be given both to any impairment of renal function and to albuminuria, although really slight deviations from normal in the former may not be of any significance, and albuminuria may be orthostatic and does not seem necessarily by itself to be a matter of serious prognostic importance

Whereas case 12 formerly had a trace of albumin in the urine and was therefore classed as "recovery," *the child now shows no abnormality* and in consequence is promoted to the category of "*complete* recovery"

The fate of those of the original series who failed to attend the recent follow-up investigation must be a matter of conjecture. Two of them, as has been said above, are known to be alive and at work; they were both classed as "complete recovery" in the 1931 investigation. Of the other 7 patients 2 at that time showed some evidence of renal damage a trace of albumin in the urine, and 2 complete ecovery

SUMMARY

A further follow-up examination has been made of 16 of the 25 cases of acute nephritis reported in THE LANCET (Tallerman 1932) Of the 16 children seen at least eight years after their acute attack, only 1 shows definite evidence of renal damage In 1 other some degree of damage may possibly exist

We are indebted to Dr A. G Maitland-Jones for ermission to report such cases as were under his are and to Dr P N Panton, director of the London Hospital clinical laboratories, in which the special nvestigations were carried out

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THE RÔLE OF OBSTRUCTION IN FATAL PULMONARY EMBOLISM

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THE lack of correlation between clinical features and post mortem findings in fatal pulmonary embolism must be apparent to all who study this accident Many have commented on the occurrence of sudden or rapid death in the presence of a degree of obstruction thought to be compatible with life, though survival of a patient for many hours in spite of gross obstruction has attracted less attention One main branch of the pulmonary artery may be ligatured without killing a patient and without untoward symptoms Removal of a pulmonary embolus rarely saves a patient's life In animals it seems almost impossible to reproduce the picture of human pulmonary embolism by methods in which obstruction of the main vessels is attempted It is not surprising therefore that the fatal outcome in pulmonary embolism has been attributed to other causes than mechanical obstruction

Villaret, Justin Besançon and Bardin (1936) reject obstruction as a cause and invoke reflex disturbances set up by the impact of the embolus From their animal experiments, in which the nearest approach to the picture of pulmonary embolism as seen in man was obtained with small emboli they infer that small emboli are a more likely cause of sudden or rapid death than large Many papers have been written on these experiments and their clinical application, and a summary of this work can be found in a small book recently published by Villaret (1938) Others regard spasm of the pulmonary artery as the important factor, the spasm being a reflex set up by the embolus Such spasm can certainly be seen in peripheral arterial embolism, but I have not found any direct observation of it in pulmonary embolism This theory does not rule out obstruction as a cause of death, but minimises the contribution of the embolus itself to the obstruction

The application of these theories to the pathology and therapeutics of pulmonary embolism in man rests on the assumption that the embolus does not kill by simple mechanical obstruction of the pulmonary circulation The purpose of this paper is to examine the validity of this assumption This is the more important since the rejection of the obstructive theory has been followed by the elaboration of treatment aimed at the postulated reflexes Thus Villaret and his colleagues rely mainly on the vigorous administration of sympatheticomimetic drugs, while Denk (1936) and others employ antispasmodics, notably preparations of papaverine, both claiming good results Now the majority of diagnosed embolisms are not fatal and it is natural that any form of therapy should give a good survival rate It has yet to be shown that these remedies can save a case from a fatal outcome, or indeed that they reduce the mortality of embolism In cases reported by Denk in which papaverine failed, failure was due to obstruction of the pulmonary circulation I shall attempt to show that this is the rule and not the exception in *fatal* cases

Bardin (1937), one of Villaret's co workers states that it is exceptional to find the embolus in the pulmonary artery or in one of its main branches, a bifurcation of a lobar branch being the usual site of arrest Unless this statement is true the application of the experimental work of the French group to human pathology lacks any reasonable basis Bardin further states that the large branched clots found in the pulmonary artery are formed in situ and are not emboli He does not explain, however, how these clots become coiled and folded upon themselves as they are so often found He cannot conceive how such a branched clot can pass without hindrance through the vena cava the auricle and the right ventricle The answer is that sometimes it cannot I have several times seen a clot continuous through the heart from the vena cava to the pulmonary artery In no less than 15 cases in my series was the clot continuous through the ventricle into the artery

ANALYSIS OF 130 FATAL CASES

At University College Hospital in the decade 1929–38 pulmonary embolism was found in 130 out of 2861 post mortems It was not the sole or even the chief cause of death in all but all have been included in order to study the effect of small emboli as well as large The clinical histories of the cases have also been examined The points to which attention is directed are (1) the size and site of the clot, with reference to its obstructive effect , (2) the mode of death , (3) the general condition of the patient The last point seems to have been overlooked by those interested in discounting the importance of obstruction The oft repeated observation that the surgeon can ligature one main branch of the pulmonary artery has little bearing on the average case of fatal pulmonary embolism I doubt if more than 10 per cent of patients who die of embolism would be regarded as fit for this intervention by a surgeon So few of them are good lives , still fewer are free from debilitating illness It is not reasonable to expect a patient with even a slight bronchopneumonia, or a patient who a few days before has had a major operation to tolerate the same degree of pulmonary obstruction as a healthy subject

The site of the clot was recorded in all cases The following are the findings

Clot in the main pulmonary artery (of which 15 extended into the heart)	46
Clot in both main branches	26
Clot in one main branch	23
Clot in branches on both sides	25
Clot in branches on one side	10
Total	130

Of the 46 cases in the first group in 2 the clot was small, leaving 44 in which the clot was obstructive

In 3 cases of clot in one main branch there was also clot in many smaller branches of the opposite side. Thus, out of 130 cases, there were 73 in which there was complete, or nearly complete, obstruction of the pulmonary circulation It must be remembered that in any case which survives for a few hours secondary coagulation thrombosis takes place round the embolus, and may convert an incomplete obstruction into a complete one I have previously drawn attention to the possibility of survival for several hours in the presence of a very large embolus (1938).

The mode of death was unfortunately not recorded in all cases In only 84 of the 130 were there useful notes on this point Three types of cases are seen: sudden death, rapid death, gradual death The first includes instantaneous death, which is rare, and death within ten minutes Rapid death means death within a period of more than ten minutes and less than an hour. Gradual death means death within any period longer than an hour.

In the obstructive and non-obstructive groups we find:

	Obstructive group (cases)	Non-obstructive group (cases)
Sudden death*	30	6
Rapid death	15	2
Gradual death	15	16

* Duration of survival uncertain in some recorded as sudden

With regard to the general health of the subjects it appears that in the whole series of 130 cases there were only 43 in whom at the time of admission a return to health could have been expected if there had been no embolism. In an additional 9 expectation of life was fair, these being mostly operations for cancer in old people Of the 43 good lives there were 11 under forty-five years of age

The distribution of the healthy subjects in the obstructive and non-obstructive groups is of interest:

	Obstructive group			Non-obstructive group		
	Total	Good lives	Fair lives	Total	Good lives	Fair lives
Sudden death	30	10	3	6	1	1
Rapid death	15	9	2	2	1	0
Gradual death	15	8	2	16	3	1

Among the sudden deaths in the obstructive group there was only one good life under forty-five

These figures are, I think, too small to draw definite conclusions about the influence of general condition on the rate of death, but in 30 sudden deaths there are 10 good lives, while in 30 rapid and gradual deaths there are 17. This does suggest that the healthy patient is killed less rapidly, and this may be an encouragement to those who favour embolectomy.

Turning now to the non-obstructive group we find that, with the exception of one death during operation, there were no examples of sudden death in good lives from non-obstructive emboli. The case of operation death was found to have a small embolus in the main pulmonary artery, and as this patient died under anæsthesia other causes may have been at work. The only rapid death in a case classed as a good life on admission was in a man who had gangrenous pneumonia after operation He is classed as a good life since he was admitted with nothing worse than a peptic ulcer. There is no recorded example in this series of a sudden or rapid death caused by a non-obstructive embolus in the absence of other important factors Against this must be set the absence of records of the mode of death in 46 cases, of which 29 were non-obstructive However of the whole group of incomplete obstructions, including those in which the mode of death is not recorded —i.e , 57 cases—all except 3 were very ill patients, many with other pulmonary disease or pulmonary infarcts from previous emboli In the obstructive group, on the other hand, of 73 cases there were 37 with no disease likely to kill other than the embolism. Of these 37 cases 33 were postoperative, the other 4 included 2 cases of apparently idiopathic thrombosis of the femoral vein, 1 case of osteo-arthritis having radiant heat, and 1 of abscess of the ankle There is therefore a contrast between the obstructive and non-obstructive groups. In the former there are 37 healthy subjects out of 73; in the latter there are 3 healthy subjects out of 57.

CONCLUSIONS

Contrary to Bardin's statement this series shows that it is the exception to find in a fatal pulmonary embolism a clot which is not producing a serious degree of obstruction. When a patient dies after a small embolism there is nearly always other gross disease contributing to the fatal outcome Fatal pulmonary embolism is not such a serious menace as some make out, for so few of the victims are good lives. There are, however, enough good lives lost from this accident to put not only surgeons but also physicians on their mettle to prevent it and to treat it. If we consider those good lives in which death was due to embolism with no other important contributory cause, we find that in 37 out of 40 the embolus was obstructive. I can see little prospect of saving such cases except by removing the clot. There is here no encouragement for the belief that injecting sympatheticomimetic or antispasmodic drugs can do anything except postpone death for a short time. There is, however, encouragement to practise embolectomy, since in half of the obstructive deaths there was ample time for embolectomy without undue haste, and moreover in the good lives death came slower than in the bad. I have previously written of slowly fatal embolism and this post-mortem study confirms my opinion that if the diagnosis of an *obstructive* embolus can be made with confidence, embolectomy should be undertaken; even if at the onset obstruction is incomplete it is likely to become complete as the result of secondary clotting unless the embolus is rapidly dislodged or fragmented.

SUMMARY

From the records of 130 cases in which pulmonary embolism was found post mortem the following conclusions are drawn:—

1 When a pulmonary embolus is the cause of death it is large enough to cause serious obstruction of the pulmonary circulation.

2 In more than half the cases the embolus occupied the trunk of the artery or both main branches

3 When death follows a small embolism it can rarely be attributed to the embolus alone

4 In healthy subjects death from pulmonary embolism is sudden in a minority of cases

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AUTOPSY INCIDENCE OF PULMONARY EMBOLISM

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FOR some years I have been dissecting the ulmonary arteries with special care in routine utopsies, and have found an unexpectedly high ncidence of pulmonary embolism The technique, which has been described elsewhere (Belt 1934b, 1936), onsists essentially of opening the secondary and ertiary divisions of the pulmonary arteries By his means many cases of embolism are disclosed which would otherwise be missed Emboli of the ungs are among the most elusive of autopsy findings, nd as Ceelen (1931) has pointed out, the frequency with which they are uncovered at autopsy tends to ary with the vigilance of the observer Many, I elieve, are mistaken for autochthonous thrombi n his extensive inquiries into the incidence of mbolism in London, Pilcher (1937) has collected surprising number of cases and has suggested hat the real incidence is probably greater than urrent statistics indicate I am speaking now f the familiar type of embolus—namely, a gross ed blood clot which has come from a vein and odged in the lung Septic and other minute forms f emboli are excluded from this discussion

A rough but serviceable distinction may be made etween major and minor embolism If a half or more of the pulmonary circulation be occluded, we call it a major embolism and regard it, for purposes of certification, as either the main or the contributory cause of death Anything less than that is a minor embolism It often happens that a major embolism may result from a shower of relatively small emboli They pass through the main pulmonary arteries and only become impacted in the secondary or tertiary branches This is the type of case that can be brought to light with surprising frequency if one is on the look out for it

There is a general tendency to underestimate not only the frequency but the significance of the smaller type of embolus, which causes most of the hæmorrhagic infarcts of the lung as I hope to show in another paper, and is many times more frequent than autochthonous thrombus in the pulmonary arteries

INCIDENCE IN DIFFERENT CLINICAL GROUPS

My observations now run to nearly 3000 autopsies, and of this number at least one in ten has shown pulmonary embolism of major or minor degree About two thirds of the cases are major embolism and a third minor The greater number are bed ridden patients beyond middle life suffering from congestive heart failure (group 1) or cachetic states (group 2), and the embolism is merely the superadded incident which hastens death Only about a quarter of these embolism cases are of the dramatic type (group 3) in which sudden death supervenes out of a clear sky But the phenomenon of thrombo embolism seems to be essentially the same no matter the type of case or whether it is of major or minor degree Therefore an analysis of the lesser cases represented by groups 2 and 3 may help to throw light on those tragic instances of major embolism which follow sometimes in the wake of surgical operation or childbirth The earlier investigations were made in Toronto (Belt 1934a, 1936), but it has been found that emboli can be demonstrated just as frequently here and in the same sort of cases My first 225 autopsies in this department yielded 29 instances of pulmonary embolism Some details of this series are set down briefly in the accompanying table Practically the same observations apply to this series as to the earlier ones I have reported The majority are medical rather than surgical cases Two thirds of them are instances of major embolism, and about half show gross infarcts of the lungs

ANALYSIS OF 29 CASES OF PULMONARY EMBOLISM

—	Group 1 Heart failure	Group 2 Cachetic	Group 3 Sudden death	Totals
Average age	51 years	62 years	59 years	—
„ weight	110 lb	104 lb	162 lb	—
Medical cases	8	10	2	29
Surgical „	0	1	8	
Major embolism	6	2	10	18
Minor „	2	9	0	11
Infarction of lung	6	5	5	16

The origin of the emboli is usually to be found in thrombosed veins of thigh or pelvis The figures for the present series are as follows femorals 15, iliacs 10, brachial 1, jugular 1, undetermined 2 Veins of the right leg appear to be affected about as often as those of the left and not infrequently both are thrombosed Usually the thrombosis is of the "silent" or so called "spontaneous" sort, without evidence of phlebitis, and it is more than likely to escape notice during life

Groups 1 *and* 2—Of the present series 8 had congestive failure and 11 others were more or less chronic invalids with various fatal affections, such as malignant neoplasm and pulmonary tuberculosis In practically all of these there was evidence of chronic vascular congestion, and one gets the impression that most of them suffered from a slackened velocity of venous blood flow The crucial observations of Blumgart and Weiss (1928) lend support to this impression They have shown how the venous pressure rises and circulation time increases when the heart is failing

Group 3—This group is made up chiefly of post-operative cases Their expectancy of life was reasonably good up to the time of the embolic seizure In the present series 5 were convalescing from laparotomy, 2 from herniotomy, and 1 from fractured femur These cases also offer circumstantial evidence of a prolonged circulation time Here the heart is not necessarily at fault, but there is good reason to suppose that there is a local lag in the venous flow from the legs, the point where the emboli often arise Indeed there are several reasons the long column of blood in the veins from the lower extremities, restriction of muscular movements in legs, abdomen, and diaphragm after abdominal operation, and pressure effects on the inferior vena cava due to postoperative meteorism Apparently the only recorded observations on circulation time in the lower extremities are those of Frimann Dahl (1935), who by an ingenious method of venography has determined a very marked lag in the blood flow through the saphenous and femoral veins in a series of post operative cases

Thus one can point to the probability of a prolonged circulation-time in the majority of cases of thrombo-embolism. *No-one would suggest that it is the only factor responsible for venous thrombosis*, but it seems to be an important factor in the development of the dangerous *type of venous thrombosis and one which* is perhaps amenable to treatment

MECHANISM OF THROMBUS FORMATION

There are probably three factors at work in the highly complex mechanism of thrombus formation: *damage to the vessel wall, increased coagulability of* the blood, and decreased velocity of flow. Thrombosis probably does not take place without at least two *of these factors acting together* I am in no position to shed any light on the parts played by damage to the vessel wall and by increased coagulability of the *blood in this series of cases* I have examined dozens of these thrombosed veins under the microscope without determining any particular lesion in the vessel wall Sometimes the thrombus is loosely attached to the intima by a bland hyaline material; sometimes it is partly organised. But there is usually no evidence of inflammatory reaction Yet there probably is a lesion at the point where the thrombus starts It may be only a minute inconspicuous eruption like that on the heart valves in rheumatic disease and therefore not easy of recognition once the thrombus is laid down. Whatever be the parts played by these two factors, we know that the formation of redundant red fibrin-clot is much favoured by stasis, and it is this type of clot rather than the white platelet coagulum with which we have to contend in the phenomenon of thrombo-embolism.

SUMMARY

Careful dissection of the lungs in routine autopsies on adults reveals a much higher incidence of pulmonary embolism than is commonly recognised. The phenomenon is to be observed more frequently in medical than in surgical cases The thrombus from which emboli are likely to arise is usually formed in the larger veins of the thigh or pelvis without obvious concomitant phlebitis In most cases of thrombo-embolism there is evidence of prolonged circulation-time.

I am indebted to Prof. William Boyd, of Toronto, and to my present chief, Prof. J. H. Dible, for the encouragement they have given me in the pursuit of this study, and to Sir Frederick Menzies, medical officer of health for the county of London, for permission to publish records of cases from Hammersmith Hospital.

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" . . . It is impossible to calculate the number of casualties in the next war, but I don't think the proportion is going to be any higher than it was at the end of the last war. We are not expecting large numbers of casualties among civilians from air-raids We are taking every precaution to protect our cities, of course But we don't think that any country is going to bomb civilian populations "—Major BRUNO BRANDI of the German Army Medical Service, in an interview given to the *New York Times*, May 11.

NICOTINIC ACID IN ENDEMIC GLOSSITIS

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(From the Skin Department of the Bicur Holim Hospital and Outpatient Department of Kupat Holim, Jerusalem)

IN 1928 I published an account of epidemic glossitis developing during the winter in Palestine mainly in agricultural settlements where the diet was badly balanced and often insufficient (Katzenellenbogen 1928a, b). The signs were swelling of the papillæ of the tongue, particularly the fungiform papillæ, frequently inflammation of the angles of the mouth, and thick coating of the back of the tongue The symptoms were severe pain in the tongue on taking sour or salty food excessive salivation alternating with extreme dryness of the mouth, and in a few cases pain in the throat *There was little intake of nourishment in spite of* a good appetite Grooving of the tongue was seen in 80 per cent of the patients and thickening of the epithelium between the grooves was found in the cases with frequent relapses In most of the cases pneumococci grew in cultures from scrapings of the tongue, but, as I stated at the time, "There is no doubt that a monotonous diet, consisting mainly of tinned food and pulses, predisposes to the development of glossitis"

I maintained my interest in this condition, but the number of cases fell from the high figures of 1926-28 (when more than 100 came under my observation and during the next ten years, which saw a considerable improvement in nutrition in the settlements, glossitis of this kind was rare, most of the patients being poor In 10 cases an estimate of vitamin C in the blood and urine showed nothing abnormal, and treatment with vitamin C produced no cure.

A FURTHER OUTBREAK

In November and December, 1938, I again noted a considerable increase in the number of cases of glossitis, and 24 patients (18 men and 6 women) were kept under constant observation They all showed the symptoms above described, 2 had an affection of the gall-bladder, 3 complained of worms, 1 had a duodenal ulcer, and 1 was in the sixth month *of pregnancy These patients* belonged to the middle classes and said that there had been no appreciable change in their diet in the past year Thus, 16 patients said that owing to adverse economic conditions they had to eat less food than before Only 1 patient (who was pregnant) said that she consumed a large quantity of milk and eggs The diet of the others consisted of pulse, rice, bread, little butter, no milk, no eggs, and meat once or twice a week but all maintained that the change in diet had been one of quantity and not of quality

I was particularly interested in this question of nutrition, for much work on diseases of the tongue has been published in recent years showing a connexion between glossitis and a lack of vitamin B_2 (Aykroyd and Krishnan 1938) The fact that in *the dog black-tongue, and in man pellagra*, can be cured by a diet rich in vitamin B_2 (yeast, eggs, liver), and that conversely the condition can be brought about by administering Goldberger's maize pellagra-producing diet 323, must point to a connexion between the pathological appearance of the tongue and the B_2 factor. Ishikawa (1937) in Japan Aykroyd (1938) in India, and others reported cures y the administration of liver, eggs, and yeast to atients with inflammation of the tongue and angles f the mouth and known to subsist on an ill balanced iet Elvehjem and others (1937, 1938) published n account of the treatment of black tongue with icotinic acid, and this was followed by the successful reatment of human pellagra with nicotinic acid Spies 1938) This induced me to treat the glossitis n the same way

CASE RECORDS

Case 1—A mason, aged 23, had complained of evere pain in the tongue for the last two weeks The angles of his mouth were inflamed and covered vith crusts His tongue was grooved the margins being somewhat furred, the surface varnished and the papillæ at the tip much swollen His diet had onsisted of rice, pulse, meat once a week, eggs arely, little fresh vegetables, and no milk Soreness had increased in the last week The patient could ake only warm fluids He was given nicotinic acid 50 mg thrice daily Three days later there was no oreness There has been no appreciable clinical change, but the patient can now eat everything—even oranges, which hitherto had caused much pain

Case 2—A clerk, aged 30 had had an intestinal complaint, said to be a duodenal ulcer, for several years He had soreness of tongue which was grooved, its borders being clean, its centre furred, and the papillæ much swollen Considerable improvement followed treatment with nicotinic acid Interruption of treatment induced a return of symptoms A further course was given of nicotinic acid 50 mg four times daily Pain completely disappeared The patient said that his digestion had not been so good for years The only attendant discomfort was an unpleasant sensation of heat half an hour after taking nicotinic acid

Case 3—A married woman, aged 28, six months' pregnant, had had soreness of the tongue six weeks Her tongue was grooved, with swollen papillæ, slight coating of the surface, and thickening of the epithelium The patient was given liver, yeast, and milk for a week Her condition became worse Nicotinic acid 50 mg four times a day was given The tongue symptoms disappeared Interruption of treatment brought a return of symptoms There was transient pain in the region of the stomach

Case 4—A clerk, aged 35 Soreness of the tongue first appeared when he was in an agricultural settlement twelve years ago Since then he had had pain almost every winter, especially on taking sour foods He often had the sensation as of an open sore on the surface of the tongue All papillæ were greatly swollen He was treated with liver, yeast, and eggs There was slight improvement a week later, followed by a recrudescence of severe pain in the tongue, and angles of the mouth The patient was unable to sleep and was compelled to keep his mouth always open There is a striking improvement forty-eight hours after treatment was begun with nicotinic acid 50 mg four times a day

Case 5—A woman, aged 21 employed in a provision shop, said that she had enough food at her disposal but suffered from loss of appetite and from abdominal pain Two weeks ago hoarseness had set in, and three days ago severe pain in the tongue Laryngological examination showed inflammatory reddening of the vocal chords Her tongue was slightly grooved particularly at the edges, and the papillæ were swollen Nicotinic acid 50 mg four times a day was given Hoarseness and lingual pain disappeared after forty-eight hours

As against 21 cases which reacted successfully there were 3 cases in which treatment with nicotinic acid produced no improvement For example —

Case 6—An unskilled labourer aged 20 had a grooved tongue, swollen papillæ dryness at night and excessive salivation during the day His tongue had white, bluish, and bright red patches He was given 50 mg of nicotinic acid four times daily, with no improvement Increase of the dose to 50 mg eight times a day brought no success

COMMENTS

Of our 24 cases 21 showed a striking improvement in symptoms on the administration of nicotinic acid I believe this variety of glossitis to be caused by a deficiency of nicotinic acid Case 2 resembles that described by Manson Bahr and Ransford (1938) Manson-Bahr believes that the skin manifestations of pellagra do not appear in temperate climates, the signs of the disease may be limited to stomatitis and diarrhœa Stannus (1936) says "Peculiar soreness of the angles of the mouth, *angular stomatitis* with a marginal glossitis are perhaps among the earliest signs of pellagra and may anticipate more active symptoms by many years" Stannus would like to include in the pellagra group the cases of glossitis or stomatitis described in warm countries, including Palestine Other authors—e g, Mackie (1938)—are of the opinion that "Lesions of the tongue are early indication of pellagra"

The clinical picture of the stomatitis I describe is reminiscent of that of the tongue in the acute stage of pellagra (Prinz and Greenbaum 1935), but it is confined to glossitis, with the addition sometimes of soreness of the angles of the mouth and sore throat Other signs of pellagra, such as dermatitis, diarrhœa, and dementia, never appear Thus, 14 patients treated in 1926 for severe glossitis were observed over a period of twelve years and showed no signs of pellagra The gastric juice was examined in 10 cases, of which only 1 showed achylia Examinations of stools showed *Ascaris lumbricoides* in a few cases but no schistosomes, unlike what is frequently found in Egypt and is said by Egyptian authors to cause secondary pellagra

It is not at all clear when soreness of the tongue appears Pellagra is not infrequently seen in Palestine, and here, as in Egypt, it comes in spring and autumn, when the characteristic skin condition usually appears on face neck, and hands (Alport et al 1938) Mild cases of pellagra show clinical improvement in winter Endemic glossitis is confined to winter The theory, advanced a few years ago, that glossitis may be related to consumption of unripe oranges is untenable There are cases in which the eating of oranges made the patient aware of soreness of the tongue Of 80 cases of glossitis investigated 50 had not eaten oranges at the time when symptoms appeared

The success of treatment with nicotinic acid supports the argument that what is present here is a deficiency disease, which might perhaps be included in the "pellagra fruste" group As regards some of the unfavourable effects accompanying the administration of nicotinic acid, Mackie (1938) says "It has been my experience that the drug (ac nic) should be used with caution in treating patients presenting lesions of the tongue" Apart from reddening of the face and a sensation of warmth immediately after administration, we found no discomfort worth mentioning Even in the case of a pregnant woman, in which administration of the drug had to be temporarily suspended owing to epigastric pain, the same dose given after an interval was well tolerated This is true not only for small doses, such as are generally employed, but also for large doses up to 0 5 g We have rarely used such doses for we have found that patients who do not react to the smaller dose will not show appreciable improvement with a larger dose

SUMMARY

Small doses of nicotinic acid (50 mg four to six times a day) brought about considerable improvement in 21 out of 24 cases of the stomatoglossitis that appears in Palestine in winter. In this condition there are no signs of pellagra apart from soreness of the tongue, sometimes also of the angles of the mouth, and sore-throat. To prevent relapse nicotinic acid must be administered for a long period

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LONG-LATENT INFECTION WITH *PLASMODIUM OVALE*

BECOMING MANIFEST AFTER YELLOW-FEVER VACCINATION

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WHILE investigating what was alleged to be a severe reaction associated with vaccination against yellow fever, the following case of malaria due to *Plasmodium ovale* was brought to light. It was remarkable for its long incubation and for the severity of the attack, and because for some time its true nature was unrecognised.

On Nov. 15, 1938, an apparently healthy young man who eight months previously had returned from a four months' tour in West Africa and who proposed to return there, was vaccinated at the Wellcome Research Institution against yellow fever by a single subcutaneous injection of a pantropic tissue-culture virus.

Nine days later he wrote saying that six hours after vaccination he had had an attack of shivering which had recurred with increasing severity on alternate evenings, the last three attacks being accompanied by progressively severe vomiting; he not unnaturally attributed this to the vaccination. In reply, it was pointed out that the symptoms were not typical of any reaction due to the inoculation but rather of some infection, such as malaria, and he was advised to call his doctor. Four days later the doctor communicated that the patient was still having severe rigors with high fever, and that he was jaundiced with bile in his urine. The doctor was advised by telephone to take blood films for examination and to administer quinine immediately. The following morning one of us saw the patient and found him very anæmic, jaundiced, and with a spleen palpable about three inches below the costal margin; a rapid examination of the blood showed a number of malarial parasites.

Although the periodicity of the ague was rather too well marked for a malignant tertian infection the severity of the illness, the jaundice and the severe vomiting in a patient from West Africa suggested clinically this type of malaria; but well-grown trophozoites and some young schizonts were seen in the blood films, and on examining the slides more carefully in the laboratory later a pure infection with *P. ovale* was found Unfortunately, owing to the circumstances of the illness no precise biochemical observations were made, but clinically it was exceptionally severe for an *ovale* infection; it was interesting to observe that, as in cases previously recorded, the paroxysms occurred in the evening.

It was a little surprising to find the patient suffering from malaria as he had never before had the disease and had been in England for the last eight months. Until the present attack he had never suffered from the slightest indisposition either while in Africa or subsequently, so that it is reasonable to consider the long-latent period as a protracted incubation period rather than an interval between a primary attack and a relapse. Although long incubation periods may be unusual they are by no means rare in benign tertian malaria, and periods from a few months up to a year or more have been described by numerous observers Much less seems known about unusually long incubation periods for other species of malaria parasites The only record of prolonged incubation period for quartan malaria appears to be the case described by Morenas and Brun (1936) where the primary attack occurred nine months after the probable date of infection There appear to be no records of unusually long incubation periods for infections with *P. falciparum* or *P. ovale* Sinton, Hutton and Shute (1939) in a study of 16 induced primary infections with *P. ovale* concluded that no evidence of prolonged primary latency could be found.

It must be added that while in Africa and during the subsequent month the present patient took 5 grains of quinine daily, and then began to omit the dose on an increasing number of days each week so that at the end of the second month home he ceased to take any An antimalarial drug may somewhat delay the onset of a primary attack but in this case, however, six months had elapsed since the patient had taken quinine, and the part played by the drug in determining the long incubation is a matter of speculation. It seems unlikely in one who had never previously had an attack of malaria that parasites could have been present in considerable numbers at any time without giving rise to symptoms Colonel Sinton informs us that *P. ovale* produces a particularly high and long-lasting immunity and it may be, therefore, that a small number of such parasites, controlled originally by quinine and insufficient to produce a clinical attack, were nevertheless sufficient to stimulate an immunity which, although failing to cure, protected the patient for several months from symptoms, until for some reason or other the balance of immunity became upset

The final point of interest is that for some time the true nature of the attack was unrecognised, and it was thought to be a reaction associated with vaccination against yellow fever The majority of people immunised at the Wellcome Research Institution by inoculation with the present strain of tissue culture virus have little or no reaction A number experience towards the end of a week slight malaise, backache or headache lasting a few days, but records of actual fever are extremely rare From time to time, however, complaints are received attributing to t vaccine various disturbances, some of which are obviously *imaginary* while others represent genuine errors of *interpretation* On a number of occasions, patients complaining of what they consider to be reactions have been found to be suffering from entirely different conditions, and notably from malaria

It is generally believed, of course, that various factors may precipitate a malarial relapse and in an attempt to determine whether there is any specific relationship between yellow fever immunisation and malarial relapse, an experiment was carried out on three rhesus monkeys (*Macaca mulatta*) although it is fully recognised that monkey malaria cannot be exactly equated with human infections The animals were infected with *P knowlesi* and during the subsequent severe reactions were treated with quinine so that the infection in each case became latent Subsequently the monkeys were immunised against yellow fever, but no evidence was obtained that this in any way influenced clinical relapses. A considerable proportion of patients who are immunised against yellow fever have been already exposed to malarial *infection, and* it seems probable that vaccination against yellow fever is *no more than* one of a number of non specific factors which *may* sometimes either precipitate a *malarial* relapse or permit a latent infection to become manifest

The present case illustrates the necessity for keeping such a possibility in mind, since failure to recognise, for example, an incidental malignant tertian infection may have serious results, and it emphasises the importance of a proper investigation of all patients from the tropics who present more than a negligible reaction after any inoculation

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CLINICAL AND LABORATORY NOTES

LARGE CALCULI IN THE POSTERIOR URETHRA

A REPORT OF TWO CASES

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CALCULI in the posterior urethra are of two varieties those that become impacted there after passing down from a point higher in the urinary tract where they have been formed, and those that are formed in situ These latter, if one excludes prostatic calculi and calculi formed in a pouch or diverticulum associated with the posterior urethra, are not common, and the two cases described below, both in patients admitted to St Peter's Hospital within a period of six weeks, are remarkable for the large size of their stones

Previous examples of this condition have been published by Bourdillat (1869), Englisch (1903), who analysed 405 cases of urethral calculus, Morton (1906), and Monsarrat (1912), all of whom wrote before radiography was in general use Huddy (1927) gave a very complete account of these stones, and Joly (1929) an exhaustive account with suggestions for treatment

CASE RECORDS

CASE 1 —A labourer, aged 30, gave a history of a severe kick in the perineum twenty years ago, after which he was in bed for ten days and passed much "gravel" He recovered and was well until four years ago, when he began to have difficulty in micturition, pains in the hips and perineum, and nocturnal incontinence—symptoms which gradually became worse until admission He had frequency of micturition, hourly by day, and two-hourly by night, he could pass only a very poor stream, which was subject to sudden stoppages, and passed a few drops of blood after each act His general health had been good, and he gave no history of venereal disease

On examination he appeared healthy: lungs, heart and alimentary canal normal blood pressure 130/90 Nervous system normal The skin of the penis was excoriated by infected urine, rectal examination revealed a stony hard mass, the size of a tangerine orange, occupying the normal position of the prostate gland and projecting backwards into the rectum, the mucous membrane of which was freely movable over it It was easily palpable bimanually but was firmly fixed The prostate could not be felt but appeared to be thinned out over the surface of the mass The urethra admitted an 8/10E steel sound only as far as the external sphincter where it could be felt to grate against a stone No instrument could be passed into the bladder The urine contained pus, blood, and phosphatic crystals in large quantities, the blood-urea was 36 mg per 100 c cm

Radiography showed a large pyriform calculus lying in the position of the posterior urethra and projecting into the region of the bladder (fig 1) Intravenous pyelography showed a mild bilateral obstructive hydronephrosis but good secretion from both sides

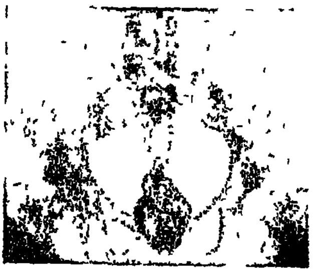

FIG 1—Radiogram showing large calculus in posterior urethra of case 1

Suprapubic lithotomy under general anæsthesia was performed on Jan 2 1939, by Mr J Swift Joly The upper portion of the calculus could be seen projecting into the bladder and was inadvertently broken off The internal meatus was almost closed, but through it the calculus could be easily felt The posterior margin of the internal meatus was divided with scissors in the middle line but this did not give sufficient access, therefore the anterior margin was also divided in a similar manner With large lithotomy forceps and a finger within the rectum pushing upwards the stone (fig 2) was removed with great difficulty the process being somewhat similar to the enucleation of an adenoma of the prostate There was moderate bleeding, so the bladder wall was sewn up round a Marion's tube, which was removed on the fourth day

Suprapubic drainage was continued until the twenty first day, when the tube was removed and the patient began to pass water naturally. The wound was dry on the twenty fourth day and on the twenty-eighth day, when he was discharged from hospital, there was found to be no residual urine. He was seen again in the outpatients' department two months later, when micturition was normal.

CASE 2.—A man, aged 42, of no occupation, gave a history of a mining accident in Sunderland twenty-nine years ago, when he sustained a fractured pelvis and a ruptured urethra, and was in hospital for some eight months. His mother refused to have anything done in the way of treatment for his urethra He developed a sinus in the right groin, through which he always passed urine, being able to a certain extent to control micturition, but in the course of years he developed sinuses, which discharged a mixture of pus and urine, in his left groin and his perineum. During the last five years the right leg had "grown shorter," and he had been unable to walk much, though his general health had remained remarkably good. He gave no history of venereal disease.

On examination he appeared pale and unhealthy, lungs, heart, and alimentary canal were normal; blood-pressure 140/80. A sinus ½ in. above the right inguinal ligament had been kept patent by an indwelling catheter, which he removed when he wished to micturate; other sinuses, discharging purulent urine, were present in Scarpa's triangle on the right side and on both sides of the perineum The right leg was wasted, with considerable apparent shortening, and the only movement obtainable at the right hip-joint was about 2 degrees of flexion, limited by periarticular adhesions The nervous system was normal. The blood-urea was 28 mg. per 100 c cm. Rectal examination revealed a stony hard mass, exactly similar to that described in case 1, except that it was slightly larger and its upper limit could not be reached with the finger. The urethra was completely impermeable at the external meatus

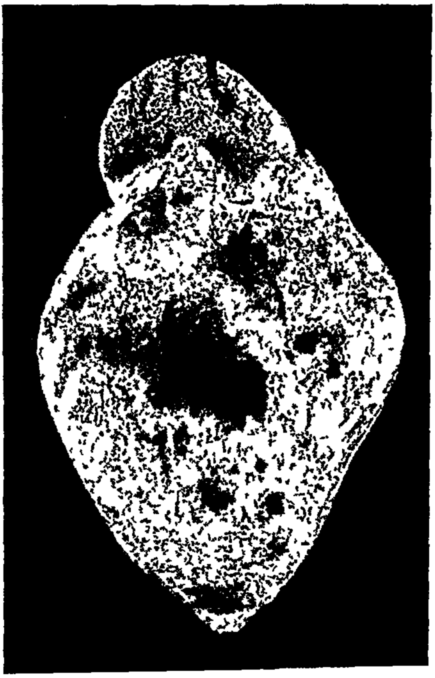

FIG 2—Photograph (actual size) of calculus removed from posterior urethra of case 1.

Radiography showed a large pyriform shadow in the middle line behind the symphysis pubis, a healed fracture of the pelvis, and a normal right hip-joint. Intravenous pyelography showed no abnormality in the upper urinary tract, with good secretion from both kidneys; the shadow of the bladder was higher than normal, and below it could be seen the shadow of the calculus with that of the catheter lying adjacent to it

Suprapubic cystostomy under general anæsthesia was performed on Feb. 14, 1939, by Mr. J. Alban Andrews When the bladder was opened, precisely the same condition existed as in case 1; the stone, lying in the posterior urethra, could be easily palpated through the almost closed internal meatus When the internal meatus was opened, the stone was found to have an anterior prolongation wedged beneath the symphysis pubis, thus making removal by the suprapubic route impossible without endangering the safety of the rectum. The bladder was therefore closed with suprapubic drainage.

A fortnight later, perineal lithotomy was performed by Mr. Andrews Access was extremely difficult owing to the adduction of the right femur and to the very narrow pubic angle due to the old fractured pelvis, but eventually the lower half of the stone was exposed and broken up with a hammer and chisel This allowed the upper half to be reached and dealt with in a similar manner. Light packing was placed in the wound, which was dressed daily The patient was considerably shocked after the operation but after the first twenty-four hours was remarkably little affected Three weeks after operation the sinuses were healed and he was draining urine well from a permanent suprapubic tube. The mobility of his hip-joint had increased in all directions, and he was once more able to walk.

COMMENTARY

In these two cases several facts, common to both, are very striking

(1) *History of trauma*—The development of these stones appears to depend on some injury to the posterior urethra, either by direct violence—as in case 1—or indirect, such as a spicule of bone from a fractured pelvis—as in case 2

(2) *Length of history*—In case 1 twenty years, and in case 2 twenty-nine years elapsed before treatment was sought.

(3) *Size of the stones*—It seems remarkable that the narrow space of the posterior urethra, bounded by the elastic prostate gland, could ever be expanded to the extent necessary to include such stones

(4) *Condition of the patient*—The comparatively unaffected general condition of the patient appears to be due to the absence of renal infection in both cases and to the gradual building up of resistance to the infecting organisms

(5) *Difficulty of operation*—Removal by the transvesical route needs extensive division of the internal sphincter and introduces the risk of pelvic cellulitis, whereas removal by the perineal route, although it undoubtedly gives more room, almost invariably leads to incontinence, according to Joly (1929), who is quoting Legueu (1921) In case 2 this risk was disregarded, for the patient's anterior urethra was already impermeable, and he was bound in any case to wear a permanent suprapubic tube, consequently he unconsciously provided a very interesting comparison between the two methods of approach.

I am indebted to Mr. Swift Joly, Mr. Clifford Morson, and Mr. Alban Andrews for their kind permission to publish these two cases.

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ACCORDING to the official German medical weekly, the German and Italian Governments have agreed on principles for the import of medical preparations, especially the traffic in medical specialities from Germany to Italy and vice-versa When these principles are observed this traffic is to be free of duty and the imported preparations are not to receive less favourable handling than those produced in the country.

BILATERAL DISLOCATION OF THE HIP WITH FRACTURE OF THE PELVIS

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Dislocation of one hip is uncommon, and the following case of simultaneous bilateral dislocation may, I think, be unique.

A lorry driver aged 28 was admitted to the Royal Bucks Hospital on Jan 11, 1939, following an accident in which his vehicle skidded and ran head on into a stone wall. His legs and arms were pinned against the lorry dashboard and the bricks which were piled on the lorry pushed the back of the driver's cabin forwards so that a large part of the weight of the bricks was transmitted to his back. This caused the whole of his trunk to be carried forwards, and both of his hips were dislocated backwards.

The patient was a big, powerful man. He was in a state of profound shock and complained of severe pain in the region of the lower lumbar vertebræ and sacrum. Both legs were semiflexed at the hip- and knee-joints. The knees were pressed tightly together and it was impossible to separate them on account of muscle spasm. He was tender in both groins. The knees were covered with shallow abrasions. He was unable to move the toes in either foot and there was complete loss of sensation from just below the left knee downwards to and including the toes. The bladder was apparently not distended, but as he did not pass urine within two hours a soft rubber catheter was passed and 10 oz. of normal urine withdrawn.

A diagnosis of a spinal injury or a severe pelvic injury was made, and when the patient had sufficiently recovered from the shock a radiogram of the spine and pelvis was taken. This showed posterior bilateral dislocation of the hips with fractures running (1) across the right acetabulum; (2) through the right sacro-iliac joint; (3) through the left side of the pubis. There was no displacement.

Treatment for shock was instituted and the same evening under deep general anæsthesia both hips were reduced. The right leg was fixed on a Thomas splint with extension and in 24 hours all pain had disappeared. He remained in bed for 10 weeks, making a good recovery, except for loss of sensation and weakness of the extensor muscles of the left leg. This partial paralysis, due no doubt to injury to the left sciatic nerve (common peroneal division), is slowly yielding to treatment.

In this case the findings seemed to point to a severe spinal injury, though it was impossible to test the reflexes or carry out a detailed examination on account of the severe pain the patient experienced on the slightest movement. The fact that both hips did dislocate no doubt prevented the far more severe injury of a fractured spine. The lack of any gross displacement of the fractured pelvis is also remarkable. It will be interesting to see whether further cases of such an injury will be recorded in these days of severe motor accidents.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

At the annual general meeting of this section held on May 25 and 26 the chair was taken by Mr H P Winsbury White, the president, and a discussion on

Radiotherapy in Urology

was opened by Mr B W Windeyer. All types of renal carcinoma, he said, remain a surgical problem when operable; he had found no records of cure by radiotherapy alone, but an intensive course of high-voltage X rays may diminish recurrences and is a valuable palliative measure in inoperable cases. Bony metastases are very radiosensitive. For Wilms tumour he advised a pre- and post-operative course of high-voltage X rays. In inoperable cases of carcinoma of the bladder—about half of the total, the insertion of radon seeds, preferably by the cystoscopic rather than the suprapubic approach, except in advanced cases, has so far been more successful than X rays, the surface application of radium, or the insertion of radium needles. Favourable results have been reported with high-voltage X rays by Gunsett and Ferguson. Supervoltage X rays (800–1000 kV) and low-voltage high-intensity X rays with the Chaoul type of tube are still sub judice. When the ureter is obstructed, with consequent renal infection, no method of radiotherapy is adequate. In many cases of cancer of the cervix involving the base of the bladder complete regression can be obtained by intracavitary radium and high-voltage X rays. Muir (1934) has shown that compared with other methods the prognosis of cancer of the prostate is improved most after high-voltage X rays. In some of Mr Windeyer's cases aggravation of cystitis has been obviated by preliminary endoscopic resection. Hanson of Stockholm and American workers have published large series of cases of cancer of the penis treated by radiotherapy, but there are few reports from this country. At the Middlesex Hospital during 1929–35, in 15 out of 21 cases the penis was rendered free from carcinoma by radiotherapy, though necrosis developed in 3. After 1934 they had used primarily a cylindrical mould, which makes it possible to distribute the dosage evenly; with this method the treatment can be spread over a fortnight, and necrosis is less likely. An occasional small area of residual growth may be treated by local radium implantation or diathermy excision. No case was complicated by retention of urine, cystitis, or contraction of the urinary meatus. Mr Windeyer favours amputation for the deeply infiltrating cases, and he thinks that metastases, which usually involve the inguinal glands first, should be excised when operable, but if they are inoperable high-voltage X rays or teleradium may have a palliative effect. Dean has indicated that enlarged inguinal glands are sometimes inflammatory and subside during treatment of the primary lesion, so that unless there is clinical evidence of metastases it is justifiable not to treat the inguinal regions but to keep the patient under observation. During 1932–39, 9 out of 11 cases of tuberculous epididymitis (all with other, and the majority with pulmonary, tuberculous foci) were treated successfully by radiotherapy—9 by surface application of radium, the other 2 by X rays.

Mr Stanford Cade favoured a wide suprapubic cystotomy and the insertion of radium needles, rather than the cystoscopic insertion of radon seeds for carcinoma of the bladder. Cystotomy revealed the surface extent of the tumour and thus enabled a rational decision to be made; if necessary diathermy, ureteral transplantation and improved drainage could be carried out and the edges, bed, and margin of the tumour could be needled. The cystoscopic method does not give these advantages, and with radon seeds uniform intensity over the period of treatment is not obtained. If conditions permit, the delivery of say 8000 r to the tumour will produce complete but not permanent regression. A burn can be avoided by giving this at an optimum dosage-rate of 35–45 r/hr., thus prolonging the treatment to ten days. In a few cases he had obtained complete disappearance of a recurrence in the suprapubic scar by using the four-gramme radium unit. Inguinal glands without superadded infection may respond to teleradium or surface radium by plaques. Radium gives poor results in recurrence after surgical excision alone. He had treated 51 cases of carcinoma of the penis by interstitial radiation and 28 were still alive, the survival-rates ranging from five to ten years in 15 cases. Surgery is necessary in cases with involvement of the urethra or corpora cavernosa, in the infiltrating type, and in cases at a late stage, whereas the papillary and to a lesser extent the ulcerative type and the early case are suitable for radium. Definite rules can be applied to the treatment of the lymphatic area—thus, if the inguinal glands are impalpable irradiation is valueless, if palpable glands do not disappear rapidly on irradiation they should be excised; and fixed glands are best treated by teleradium. During 1924–37 he had treated 12 cases of carcinoma of the female urethra, all proved histologically. 6 are alive and well with survival periods of from five to eleven years. Needles were always implanted round and not inside the canal, and in some cases intravaginal cavitary radiation was applied. No case required a suprapubic cystotomy, but one developed a stricture requiring urethral dilatation for five years following treatment.

Dr. **GEORGE VILVANDRÉ** thought that X-ray therapy in carcinoma of the prostate was purely palliative: he put the expectation of life in untreated cases at from six months to five years, and remarked that one patient of his with bone metastases is at present working as a carman. In inoperable cases of renal carcinoma he was convinced of the value of deep X rays and suggested their use postoperatively to prevent recurrence: they were also of value in stimulating granulation of a sinus remaining after removal of a tuberculous kidney.

Mr **WALTER W. GALBRAITH** reported some regression of the growth after X-ray therapy in 6 cases of renal tumour, 17 cases of vesical neoplasm, and 6 cases of carcinoma of the prostate: all the cases were inoperable.

Dr. **STRUTHERS FULTON** advocated the intracavitary X-ray method, which irradiated a small volume of tissue with a correspondingly higher dosage, in growths of the bladder not exceeding 3–4 cm. in diameter.

Mr. **CLIFFORD MORSON** said that of 5 cases of carcinoma of the penis which were irradiated ten years ago and apparently cured, only 1 (warty type) is now alive, and amputation for recurrence was performed in the other 4. During the past twenty years 1000 cases of carcinoma of the prostate had been seen at Whipps Cross Hospital: the view there was that surgery and radiotherapy were equally disappointing for this growth, and they now left the primary growth untreated until a suprapubic cystotomy was required. The average length of life in such cases was five years.

Mr. **MOORE PATTERSON** discussed testicular neoplasms and quoted statistics showing that the five-year survival-rates with different methods of treatment were: radical excision, 6.6 per cent.; orchidectomy only, 17 per cent; radiation only, 20 per cent, and orchidectomy plus irradiation, 55 per cent. He thought that orchidectomy should be performed even when metastases are present, and that in inoperable cases irradiation is a valuable palliative, especially for relief of pain.

The **PRESIDENT** brought out certain points in connexion with the suprapubic implantation of radium needles in carcinoma of the bladder—namely, the necessity for preoperative indwelling catheter drainage in certain cases, the necessity of transplanting a ureter if the growth is in the vicinity of its orifice, and the value of a permanent suprapubic apparatus which is worn for from four to six months (judged by cystoscopy) to obviate fistula formation. The operative mortality, he said, is low compared with partial cystectomy.

Mr H. W. **SYMONS** said that long-standing multiple papillomatosis may be rendered suitable for fulguration after one or two courses of deep X rays.

Mr. **ARTHUR JACOBS** had treated some wide based growths of the bladder by diathermy followed by radium (5500–6000 r). Of 13 cases 4 show no recurrence after from two and a half to five years.

Mr. **JOCELYN SWAN** had treated 7 cases of vesical cancer by fulguration and irradiation by the Chaoul tube during the last eight months, the bladder being drained by continuous irrigation. In 2 cases so far the ulcer has healed, judged by cystoscopy.

Mr. R. **OGIER WARD** thought that radon seeds had a place in the treatment of some cases of vesical cancer—for example, in those with recurrence after partial cystectomy. The seeds could be placed in a good position with a panendoscope; it was unusual to get cystitis and only 2 of his cases had formed stones.

Mr T. J. **MILLIN** mentioned the desirability of a biopsy with loop before treatment of cancer of the bladder, and the value of the Stedman suction pump afterwards.

Conservative Treatment of Hydronephrosis

Mr. E. W. **RICHES**, on the second day, spoke on the treatment of hydronephrosis. He considered his results from conservative surgery by four methods—namely, (1) division of vessels, 6 cases; (2) minor plastic operations, 4 cases; (3) major plastic operations, 31 cases; (4) sympathectomy, 13 cases. The results, judged by abolition of pain, radiological improvement, functional improvement, and absence of infection, were good in 6, 3, 19 and 11 cases respectively in these groups, making a total of 72 per cent good results in all groups. The period since operation ranged from a few months to eight years. Secondary nephrectomy had been necessary in about 10 per cent. of the 54 cases. In hydronephrosis his suggested procedure is first, to control the infection; then, in the case of a small hydronephrosis to do a sympathectomy if there is no mechanical obstruction, to divide moderate-sized vessels if there is external obstruction, or to do a minor plastic operation if there is ureteral stenosis. For a large hydronephrosis he advocates a major plastic operation if infection is absent or controllable, and nephrectomy if infection is gross and the other kidney is sound. Sympathectomy may be combined with any of the other conservative procedures.

Mr. **VICTOR DIX** had performed a radical operation in 34 cases (nephrectomy in 32) and a conservative operation in 26 cases. In the latter group out of 6 cases in which he had divided the lower-pole vessels 5 lost their symptoms, with a perfect pyelogra in 4, out of 10 cases in which the pelvis was excised with reimplantation of the ureter (von Lichtenberg) 5 cases lost their symptoms, with a perfect pyelogram in 2, and there were 2 known failures, and out of 8 cases in which a temporary nephrostomy was *performed with a plastic procedure 7 lost their* symptoms, with a perfect pyelogram in 4 cases In some cases the result by conservative surgery was indifferent, though the patient was free from symptoms He tended to do more nephrectomies and fewer conservative operations

Mr **Hamilton Bailey** discussed the results of drastic resection of the pelvis followed by end to end nephro ureteric anastomosis The renal vessels if large should be saved when possible, and the nephrostomy opening should be made through the calyx nearest the surface Of 17 cases who had attended for investigation 15 were perfectly well judged by cystoscopy, the indigo test, pyelography and bacteriology, 6 others were perfectly well but refused cystoscopy, and 4 more were in full work though in 2 function was poor He had only known 1 real failure, which was a case of renal fistula The same operation may be employed to remove a cast calculus from the renal pelvis Von Lichtenberg's operation he thought 'unsound from a plumber's point of view," since the only way to get the necessary dependent drainage is by end to end anastomosis Provided drainage is free, even cases of pyonephrosis are no trouble

Mr W E **Underwood** urged that the ideal of conservatism is to tackle the early hydronephrosis due to nervous imbalance before the secondary mechanical factors come into play, and he described an apparatus by which cases suitable for denervation can be determined and by which the end result of treatment may be assessed The apparatus transmits contractions of the renal pelvis to a water manometer (via a ureteric catheter), the normal range of movements being 0 5–2 cm of water these are recorded on a drum In cases where the suitability for sympathectomy is in doubt spinal anæsthesia may reveal that the pelvis is able to contract regularly On the theory that the pelvis may be *subject to deficient* parasympathetic impulses rather than overaction of the sympathetic he suggested it may be worth considering splanchnic neurectomy in place of perirenal sympathectomy This would obviate peripelvic fibrosis should subsequent pyeloplasty be necessary, there is no bleeding from the renal pedicle and no ill after effects Nerve trunks rather than individual fibres had to be divided, so that it was less extensive and perhaps more efficient

Mr J B **Oldham** showed very satisfactory pyelograms from 3 cases of hydronephrosis, five, six and seven years after renal denervation alone He thought that the essential lesion was neuromuscular imbalance at the pelvi ureteric junction and that kinks and twists were a later development He was impressed by Riches' and Underwood's results with sympathectomy and believed other good results were due to incidental renal denervation He was against dividing aberrant renal vessels

The **President** maintained that nephrectomy is the best remedy for hydronephrosis because when expansion of the minor calyces is present to any extent it is likely to continue Plastic procedures, which will not cure the condition are useful when it is already or is likely to become bilateral His opinion of von Lichtenberg's operation was that although the pain is alleviated the hydronephrosis persists, obstruction at the pelvi ureteric junction returns and renal function is decreased Nowadays he resects the pelvis along the lower border and shapes it to give good dependent drainage, keeping clear of the pelvi ureteric junction, the latter is then dilated, the pelvis restored, and the wound closed with a rubber drain down to the suture line This is applicable when the pelvis only and not the calyces are dilated

Mr T J **Millin** mentioned a case in which after removing 44 pea sized stones from the lower pole of a solitary kidney he left the patient with a permanent nephrostomy if more stones form only one night's hospitalisation is necessary

Mr H V **Wells** described a method of avoiding ureteric transplantation in a plastic operation by converting part of the pool *of the pelvis If sutured* closely, nephrostomy—which is to be avoided if the pelvis is not infected—is unnecessary

Mr **Dix** in reply said he still thought that abnormal lower pole vessels are sometimes the cause of hydronephrosis In some cases he was certain he had not divided the nerve-supply and yet they had improved

Mr **Hamilton Bailey** considered nephrostomy—which was not included before von Lichtenberg's operation—the turning point in success The stricture at the pelvi ureteral junction should be excised

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

At the quarterly meeting of this association held on May 23, with Dr J R **Gilmour**, the president, in the chair, five papers were read on the use of

Recreational Therapy

in mental disorders and mental defect, the first three dealing with psychiatry, the others with mental deficiency

Dr P K **McCowan** emphasised the fact that recreational therapy differed from recreation as much as occupational therapy from occupation, and that it was very beneficial, especially when conducted by trained recreational therapists It should always be regarded as a means to an end and not as an end in itself It brought the schizophrenic into touch again with reality and diverted the melancholic from his depressive thoughts Four forms of this treatment were especially beneficial (1) physical drill in every ward for ten minutes before breakfast, (2) gymnastic exercises, preferably in a separate gymnasium or in the dining hall each class numbering not more than 12–20 and working for not more than forty minutes, starting with Swedish drill for ten minutes and then going on to other gymnastic exercises and ball games or badminton, classes being divided into elementary, intermediate, and advanced, and the elementary class being given a minimal amount of drill (3) swimming in a bathing pool (extremely popular and sometimes the only recreation acceptable to patients), and (4) cycling some of the patients at the Crichton Royal Dumfries being allowed away from the hospital for a couple of hours or so

Dr J M **Sterr** said that dancing was preferable to other games because the latter had a limited appeal to the female patients Physical training was valuable but again the appeal was limited Folk dancing had four advantages over ordinary ballroom dancing (1) it was never stereotyped and consequently was not apt to become monotonous or semi automatic—there was always something new to learn (2) it enabled the sexes to mingle more freely than they could in the ballroom (3) there was a mild form of discipline and social coöperation in the figures; and (4) it appealed to the æsthetic taste Classes were held for an hour each week in the winter Reluctant patients were allowed to be passive spectators at first, and many soon asked to be allowed to join in A uniform for the dancers was an added attraction (men dancing in white flannels) Folk-dancing appealed especially to schizophrenics.

Dr. T. P. **Rees** (whose paper was read in his absence) said that at Warlingham Park Hospital, Surrey, the physical training was conducted by an ex-army physical trainer who was also a qualified mental nurse This form of recreational therapy was extremely useful for rousing patients from lethargy, improving their physique, encouraging their social activity, and, above all, producing muscular relaxation, especially in catatonics For the last-mentioned purpose passive rhythmic movements were practised in time to music (a catatonic standing idle with a broom began to sweep the carpet in time to the music and ceased with it). The proper grading of patients for recreational therapy was difficult but essential, different forms of exercise being suited to stuporose and maniacal patients Every patient on discharge was advised to attend continuation classes

MENTAL DEFICIENCY

Dr. J. T. **Curran** gave some account of the scouts, guides, and concert parties instituted at Lennox Castle, Stirlingshire Adult males, aged 18 or more, with a mental age of at least 8 (I.Q 60) and a three months' record of good behaviour, were allowed to apply to join the rovers. Patrols were named after clans, and a roll of honour was kept of famous members of each clan (there was some difficulty with the Macphersons about Aimée) The moral training of the alleged amoral defectives was a pill that had to be heavily gilded For this purpose scout law was ideal; it was simple and positive, with no "thou shalt not." The rovers were given a hut of their own, each clan having a corner for which it was responsible. They were encouraged to use tools and to cook their meals out of doors occasionally Aments learned better through their hands than through their ears. The curriculum included a weekly hike combined with nature-study Camp in the summer was a reward for good behaviour during the previous winter. The better patients should be, and were, allowed to attend the social activities of normal outside scouts and to compete with them; but it was unfair both to the patients and to the normal scouts to allow those patients to attend who carried their diagnosis in their faces. Scouting was useful not only to the patients but also to the medical officer; it enabled him to become much better acquainted with them, being somewhat akin to play therapy in the case of children, by which they were disinhibited One great advantage was that there was no need to spend money on a trained recreational therapist. Concert parties were also very valuable, because defectives usually liked the limelight, and unless they were given some such outlet their self-assertiveness might lead to bad behaviour to attract attention Recreation was thus provided not only for actors, singers, and dancers but also for dressers and stage-carpenters

Dr. N. H M. **Burke** spoke on team games and other athletic pursuits at Cell Barnes, St. Albans. Mental defectives differed from other categories of patients in mental hospitals in that they were young in body, years, mind, and experience, their prospect of leaving the institution was extremely small; and usually their parents and other relations had lost all interest in them. The colony therefore had to be parent, friend, teacher, and nurse to them. In such a colony the task was not the reawakening or restoration, but the initial development, of social activities and responsibilities. Luckily most forms of recreational therapy did this. Team games were of great value, and it was good for the patients to recognise that in some activities they could hold their own or even beat the normal staff and outsiders Physical training should be recreational—i e, interesting and amusing—and never compulsory. The improvement in posture due to physical training was so great that it was sometimes hard to recognise the patients The annual display not only gave them self-confidence but also was a very valuable form of publicity and propaganda.

BRITISH ORTHOPÆDIC ASSOCIATION

The spring meeting of this association was held at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, on May 5 and 6 In a presidential address entitled *Some Aspects of Bone Surgery* Mr **Naughton Dunn** surveyed the measures adopted to secure bony union in ununited fractures and in diseased and damaged joints As a substitute for bone-grafting he advocated the subcortical exposure of the bone ends and a thorough refreshing producing multiple chips with intact periosteal attachments His lecture was illustrated by many successful results

Mr D **McCrae Aitken** (London) set out some of his ideas on the *postural function of the muscles of the lower limb* He emphasised the importance of these muscles in health and disease, not only of the lower extremity but of the body as a whole In particular he was impressed by the value of the movement of rotation in all activities

Mr R C **Murray** (Oswestry) gave a paper on *fractures of the head and neck of the radius* This was a survey of 459 such fractures treated at the Liverpool Royal Infirmary during the ten years 1927–37 Most of them appeared to have been caused by indirect violence He concluded that conservative treatment usually gives the best results and that operation should be reserved for fractures of the neck irreducible by manipulation, for the removal of a completely detached fragment displaced into the joint, for grossly comminuted fractures and for certain depressed marginal fractures As a rule complete excision of the head was preferable to partial removal

In a symposium on *tuberculous joints* Mr G T **Partridge** (Chester), Mr. S **Thompson** (Oswestry), and Mr. **Murray** described a follow-up of the patients treated in the Robert Jones and Agnes Hunt Orthopædic Hospital from 1920 until 1934 for tuberculosis of the sacro-iliac joint (48 patients), of the shoulder joint (27), and of the knee (322) About a third of those with sacro-iliac disease died within 4½ years of the onset; the remainder were alive and for the most part well. The results of sound conservative treatment appeared to be as good and as lasting as those in which a final arthrodesing operation was performed Tuberculosis of the shoulder seemed to have a favourable outlook. It usually affected young adults, and there was a long history of vague pain, treatment being seldom undertaken until an abscess appeared The presence or absence of a sinus had an important bearing on the prognosis, whether the treatment was conservative or operative. Conservative treatment was advisable until the disease was healed, when an extra-articular arthrodesis was a useful stabilising procedure Tuberculosis

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arthritis of the knee occurred in about 11 per cent of all cases of bone and joint tuberculosis treated in the hospital Primary synovial disease progressed to bone involvement in about 45 per cent of cases and took on an average about three years to do so The focal articular type had a high fatality rate (22 per cent), owing to subsequent lesions elsewhere With most extra articular lesions the prognosis was excellent In tuberculosis of the knee lengthening of the affected limb was twice as common as shortening

Prof E W HEY GROVES (Bristol) described a *combined bed frame and splint for fractures of the lower limb* This consists of a portable tubular frame resembling a Bradford frame To it is attached an adjustable back rest and the mattress on it is partitioned to facilitate nursing The object of the frame is to allow traction to be applied to both lower extremities with the patient in the sitting position The traction need not be disturbed for transport, for radiography or for such operative procedures as the introduction of a Smith Petersen nail into a fractured neck of femur

Mr J H MAYER (London), speaking on the treatment of *Colles's fracture,* said he thought that in as many as half the cases apparently successful reduction and adequate splintage is followed by recurrent displacement He attributed this redisplacement to supination of the lower radial fragment, which was often not corrected during attempts at reduction Forcible pronation of the distal fragment was an essential step in manipulative reduction, and should be maintained by including the wrist and elbow in plaster of paris

REVIEWS AND NOTICES OF BOOKS

Carbon Monoxide Asphyxia

By CECIL K DRINKER, professor of physiology and dean of the school of public health, Harvard University London Humphrey Milford, Oxford University Press 1939 Pp 276 25s

Prof Drinker has a reputation as a physiologist for sound balanced writing, and this important monograph will undoubtedly enhance it The book, profusely laden with statistics, concerns itself with the various medical aspects of exposure to carbon monoxide—physiology, biochemistry, symptomatology and pathology—and it also aims at wedding these with the industrial aspect Such treatment provides an ideal forensic review for the medicolegal pathologist, the coroner, and the barrister in criminal and industrial practice The interest of the book is enhanced by the personal observations and strictures of Drinker himself his experience as physiologist in the Harvard school of public health and as scientific expert to the American Gas Association has provided him with unparalleled opportunities for acquiring first hand knowledge, and as a result he can be not only exhaustive and authoritative but also critical—and always readable Drinker's personal contribution is completed by a section on analytical methods by Julius Sendroy and an extensive and modern bibliography There is no other modern monograph on CO poisoning and for some time there will be no need for another

A Textbook of Histology

Functional Significance of Cells and Intercellular Substances (2nd ed) By E V COWDRY professor of cytology in the school of medicine, Washington University, St Louis London Henry Kimpton 1938 Pp 600 31s 6d

As its secondary title suggests, this book contains much more than an account of the microscopic anatomy of various tissues and organs After reading a few pages one ceases to consult a textbook or impersonal record of facts and slides into the companionship of a lively observer indeed a master, willing to put his experience and reading at one's disposal He looks down the microscope with the eye of a physiologist and calls attention to appearances for which a functional meaning has already been worked out or for which a functional interpretation may be suggested He makes no apology for this attitude For example he says (p 471) of the cross striation pattern of the myofibrils of voluntary muscle, "They have been studied in the most minute detail in the hope of discovering some logical explanation of the phenomena of contractility Purely morphological studies have come to an impasse The tendency is now to concentrate on the experimental analysis of the chemical and physical properties of the fibres Yet it is important at short notice to be able to correlate the newer findings with what is known of structure" This paragraph will win the confidence of medical students When they find on the next page a full account of the striation pattern, together with the recent results of micro incineration studies, they will recognise with gratitude information clearly labelled "to be taken only when required" The reference (p 475) to the experimental work, as yet unconfirmed, which resulted in the transformation of the smooth muscle of the dog's urinary bladder into striated muscle under the influence of forced activity, gives a spur to the interest of all those who examine this tissue, whether their bias be morphological, biochemical or biophysical The treatment of this subject of muscle striation is typical, a fine balance has been maintained throughout the book between the functional and morphological aspects of histology

The plan is not to avoid controversial subjects but rather to seek them out and air them Prof Cowdry has succeeded in presenting the evidence fairly and has acknowledged the labours of leading investigators New techniques are described with references to original papers—for example, the cyclic functioning of the splenic venous sinuses as determined by the transillumination of the living organ (Knisely's technique) is clearly set out both in text and figures The newcomer in the field is constantly made aware that the subject has need of his utmost service The book acts as a canaliser of energy

Handbook of Ophthalmology

(3rd ed) By HUMPHREY NEAME, F R C S , senior ophthalmic surgeon to University College Hospital surgeon to the Royal London (Moorfields) Ophthalmic Hospital, and F A WILLIAMSON-NOBLE, F R C S , assistant ophthalmic surgeon to St Mary's Hospital, ophthalmic surgeon to the National Hospital Queen Square London J and A. Churchill. 1939 Pp 432 13s 6d

THE object of this book—to present the essential principles of ophthalmology—is achieved These principles are illustrated in the descriptions of the common ocular disorders seen in daily practice, in the outpatient department and among medical inpatients in a general hospital The pictures, many of which are in colour, show a number of external diseases and fundus disorders and are mostly admirable Fig 153 a drawing of Greeves's operation for ptosis, is, however, inaccurate, the incisions are incorrect in site, length, and number—there should be only one. In fig 170, showing expression of the lens, pressure is being made at the wrong site on the cornea and the pupil is too small to facilitate delivery of the lens A number of small alterations and additions have been made in the third edition. A section has been written on the principles and practical value of contact lenses, and the part played by vitamins in diseases of the eye has been described Lieut.-Colonel Harold Williamson, I M.S (retd.), and Lieut.-Colonel E. W. O'G. Kirwan, I.M.S, have coöperated in modifying and enlarging the chapter on tropical ophthalmology.

The book will continue to serve well the needs of general practitioners and students.

Internal Medicine

(3rd ed.) Edited by JOHN H. MUSSER, M.D., F.A.C.P., professor of medicine, Tulane University of Louisiana school of medicine. London: Henry Kimpton. 1938. Pp. 1428. 45s.

THIS third edition maintains the high standard usual in American clinical textbooks: it is a thorough, complete and highly finished production. Much has been rewritten and recent therapeutic advances, both chemical and surgical, have been included. The work makes no claim to the scope of an encyclopædia but the senior student or practitioner will rarely fail to find some mention of the most obscure condition. The contributors are authorities whose opinion counts and the value of each section is increased by brief historical notes and lists of references, mainly American, to amplify the text. The book provides a balanced survey of modern American views.

Handbuch der Virusforschung

(*Erste Halfte*). Edited by Prof. R. DOERR, Basel, and Prof. C. HALLAUER, Bern (With the collaboration of Dr. F. M. Burnet, Dr. W. J. Elford, Dr. G. M. Findlay, Dr. M. Haitinger, Dr. M Kaiser and Dr. W. M. Stanley.) Vienna: Julius Springer. 1938. Pp. 546. RM.66.

KNOWLEDGE of viruses and virus diseases advances so rapidly that books devoted to this subject may be in need of revision as soon as they appear. This one, however, is concerned only with the general aspects of virus research and its technical approach, and it is safe to predict that virus workers will consult it for some years to come It begins with a historical introduction describing the investigations which led up to the conception of filtrable viruses and then proceeds to a consideration of the nature of these agents Prof Doerr has devoted much time and thought to this aspect of virus research, and those who have read his publications or heard him open the discussion on the subject at the International Congress of Microbiology held in London in 1937 know how philosophic is his approach to it Here he reviews all the available evidence and discusses its bearing on the nature of viruses with admirable balance and detachment. The description of the morphology of viruses begins with an essentially practical account by W. J Elford of the methods available for the determination of the size of viruses: ultrafiltration, ultracentrifugation and ultraviolet-light photography. This article is concise and clear and is one of the most valuable parts of the book M. Haitinger discusses fluorescence-microscopy, a recent addition to the technique of the microscopy of viruses, and M Kaiser writes on methods of staining His account is comprehensive and in the main adequate, though some of the illustrations, in particular that on p. 280 depicting psittacosis virus stained by Castaneda's method, are not good, the description of this method of staining makes no mention of the modifications by which Castaneda's original procedure has been improved. G. M. Findlay's extensive knowledge of the subject makes his consideration of inclusion bodies and their relationship to viruses remarkably complete His exclusion of the rickettsia from the virus group would not be generally accepted When he speaks of "saprophytic" viruses living intracellularly he must surely mean parasitic but non-pathogenic viruses. C Hallauer discusses the various methods of growing virus in conjunction with tissue fragments, while F M. Burnet describes the technique of virus cultivation on the chorio-allantoic membrane of the developing hen's egg and the application of this procedure to quantitative virus estimations and the study of immunological problems. Both articles are good, particularly the latter. W. M. Stanley writes on the biochemistry and biophysics of viruses. Those who contemplate applying to their investigations the methods which have resulted in the isolation of heavy virus proteins will find this section valuable, though to the biologist it seems that the conclusion that a certain virus is a heavy protein is sometimes based on insufficient evidence. In a table under the heading "molecular weight" figures are given not only for all viruses but also for bacteria and even red blood corpuscles; this is rather confusing Stanley also says that the resistance of viruses to $HgCl_2$ marks them off from ordinary organisms or even bacterial spores Since W Bulloch has shown that some bacterial spores may be viable after 646 days' exposure to 1 in 1000 $HgCl_2$ this statement is hardly justified. In general, however, Stanley's section is very good, fully maintaining the high standard of the rest of the book.

Surgery of the Ear

Nelson Loose-leaf Series. Edited by SAMUEL J. KOPETZKY, M.D., F.A C.S, professor of otology, New York Polyclinic medical school and hospital. London: Thomas Nelson & Sons. 1938. Pp. 468.

THIS book consists of a series of monographs by authorities all of whom, with the exception of Prof. G. Holmgren of Stockholm, hail from the United States. The editor claims with justice that the senior student of otological surgery will find little that will have to be skipped as obsolete, for the book gives detailed descriptions of the most recent opinions and technical procedures. In this respect the chapters on suppurative petrositis by Ralph Almour, on the surgery of facial paralysis by T G. Tickle, and on surgical therapy in otosclerosis by Holmgren deserve special mention; these supply full practical details by pioneers of surgical methods for conditions whose treatment has made great progress during the last few years The editor contributes an informative preliminary chapter on the basic factors underlying otitic suppurations, which is an excellent essay in clinical pathology W E. Dandy describes the technique of the operation for division of the auditory nerve in the treatment of Menière s disease, though he does not discuss other surgical methods such as injection of alcohol; apparently this chapter was written before the publication of the work of C. S. Hallpike and H. Cairns, for Dandy says that, so far as he is aware, no cases of Menière's disease have been studied at necropsy. The illustrations are numerous and good, and each chapter has its bibliography The work is of outstanding merit and will be indispensable to practising otologists.

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THE LANCET

LONDON SATURDAY, JUNE 3, 1939

THE PULMONARY EMBOLUS

PULMONARY embolism is a possible complication of any illness It has attracted most attention as a postoperative or puerperal accident, for as such it may kill patients who are expected to recover and have many years before them In non surgical cases it is accepted with greater equanimity, for few of its victims in this category are likely to recover useful health Hence it is natural that the surgeon and obstetrician should be more concerned about embolism than the physician But if more is to be learnt about it all its manifestations must be studied Three basic facts may be recalled, they are familiar enough but seem to be conveniently forgotten from time to time First, many cases of pulmonary embolism diagnosed with reasonable certainty recover spontaneously, secondly, emboli are often found post mortem when death has been attributed to other causes, and thirdly, thrombosis often occurs without being followed by embolism Nevertheless thrombosis is the necessary antecedent in every case and at present the main hope of reducing the mortality lies in preventing the thrombosis Until this hope is realised the problem of treatment remains, and to solve it we need to know how often embolism kills, how it kills, and how far any methods in use prevent it from killing

Estimates of the incidence of pulmonary embolism differ—not only because of differences in material but also because it is sought with varying care LERICHE and his collaborators[1] found 225 fatal embolisms in 14,829 autopsies, PILCHER[2] 731 in 36,145, and counting both fatal and non fatal cases PILCHER found 130 in 2861 Dr BELT in our present issue reports that in making 3000 post mortem examinations of unselected cases he has found evidence of pulmonary embolism *in no less than 10 per cent* Such careful examination as BELT'S is essential for a reliable estimate of the true incidence of embolism apart from fatalities, and it could be of help in studying the effects of prophylaxis To study them on the basis of fatalities alone is very difficult since they are infrequent and irregular in distribution It may fall to the lot of any surgeon to work a year without a death from this cause and then meet with several in a few weeks

As to how embolism kills opinions again differ Certain French authors maintain that death is due to reflexes set up by the embolus and that obstruction of the circulation through the lungs is not required This view, which is ill supported by clinical experience, is mainly based on animal experiments suggesting that small emboli are a greater menace than large BARDIN[3] has stated that in human pulmonary embolism it is exceptional to find the embolus in the trunk or main branches of the artery, and if this were true it would support the parallel between the human and experimental embolisms But Prof PILCHER, who has investigated this point, records this week his finding that in most fatal cases the clot is in the trunk or main branches and there appears to be an insuperable obstruction to the circulation LERICHE too found that in about two thirds of the cases there was complete obstruction Moreover PILCHER failed to find a single case in which the only apparent cause of death was a small embolus This important difference in observation may be explained by BARDIN'S view that large clots found in the trunk and main branches are formed in situ just before or after death and are not emboli, it probably depends on the criteria used in distinguishing between ante-mortem and post mortem clots But it may account for some of the fatalities attributed to small emboli For instance in one described by WILMOTH and MOTTE[4] death occurred in spite of prophylaxis and treatment according to the reflex theory, a clot was found in a small branch but there is no note of the contents of the main artery

If there is an obstructive embolus it is hard to see how the injection of antispasmodic or sympatheticomimetic drugs can do anything but delay death a little Such delay will be of value only if one undertakes rational treatment—i e, removal of the obstruction The only means of removal at present is by the operation of embolectomy PILCHER holds that the good lives lost are nearly all lost through obstructive emboli and these are the cases we are most concerned to save The report by IVOR LEWIS[5] of his successful case, the first in this country and the twelfth in the world literature, should encourage others to persevere with this treatment until something better is found OTERO and FERREIRA BERRUTI[6] report a case in which the embolus was found extending from the vena cava through the heart into the pulmonary artery and suggest that such a clot would be difficult to remove, technically the difficulty should not be insuperable, but the importance of this condition is shown by PILCHER'S finding 15 cases in which the clot was partly in the heart While it seems clear that nothing short of operation can relieve a circulation which is mechanically obstructed, it remains true that death may take place in the absence of gross obstruction, and it is desirable to know what value nonoperative remedies have For this purpose considerable experience is necessary and a knowledge of the fatality rate of the condition as a whole All surgeons are familiar with recovery after desperate symptoms, and little is known about the natural survival-rate. DENK[7] and VOGEL[8] using injections of Eupaverine have reported small series of cases—some successful, others not. But such reports, though interesting, justify no conclusion about the value of this remedy.

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[1] Leriche R Fontaine R and Friedmann, L, *J Chir Paris* 1937 50 72

[2] Pilcher R *Brit J Surg* 193[illegible], 25 4[illegible]

[3] Bardin P L'embolie pulmonaire Paris 193[illegible]

[4] Wilmoth P and Motte A *Pr med* [illegible] 1939, [illegible] 353

[5] Lewis I *Lancet* May 6 1939 p 1037

[6] Otero J P, and Ferreira Berruti P [illegible] Montevideo 1938 9 24[illegible]

PLACENTAL INFARCTS AND TOXÆMIA

A FEW months ago we drew attention to the work of BARTHOLOMEW and his colleagues of Atlanta, Georgia.[9] They emphasised a relationship between placental infarcts and toxæmia of pregnancy, and in describing the ease with which infarcts may be overlooked they suggested an explanation why the relationship was not established long ago. From an examination of the placentas of patients whom he has never seen Dr. BARTHOLOMEW endeavours to deduce the clinical condition, and the degree of success he achieves entitles his claim to serious consideration. At the same time the correspondence between placental and clinical diagnosis is not perfect, and some rather less straightforward explanation than toxæmia simply from the products of placental autolysis is probable. Later investigations by the same group of investigators,[10] coupled with some older findings, while of great interest in themselves are made the foundation of a theory that we must regard with a certain amount of reserve. This is not because of doubt about the facts, but because the chain of evidence does not exclude alternative possibilities, and the longer the chain the greater its weakness.

The lesions in the fœtal placental vessels are similar to those found in experimental cholesterolæmia, and investigation of 62 coloured adolescent primigravidæ, 24 of whom developed toxæmia, showed that the average blood-cholesterol of the toxic group was somewhat higher than that of the non-toxic group; it is not clear from the plotted points whether or not this difference is statistically significant The inverse relationship between blood-cholesterol and thyroid activity seems to hold good, and the correlation between basal metabolic rate (B.M.R.) in the third month and toxæmia is suggestive. Not one case of toxæmia was found in 12 members of the group whose B.M.R. was +10 or more, whereas nearly half the remainder, having a normal or subnormal B.M.R., developed toxæmia. This failure of the thyroid to respond to the pregnant state is apparently related to age, none of the group being over eighteen years old. The sequence of events implied is: pregnancy during adolescence—inadequate thyroid activity—increased blood-cholesterol—increased susceptibility of placental vessels to injury—infarction—autolysis—toxæmia. Nevertheless with the onset of symptoms the B.M.R. rose in the toxic group and continued to rise till the end of pregnancy, finishing much higher than in the non-toxic group; there was a concomitant fall in blood-cholesterol. This rise in B.M.R, which is strikingly shown in the published curves is attributed to absorption of autolytic products from the placental infarcts. Guanidine, which might result from the breakdown of arginine, an amino-acid of which the placenta contains an excessive amount, is favoured as the possible immediate cause of the toxic symptoms It is also suggested as the cause of spasm of the retinal arteries, the degree of which follows closely the severity of the toxæmia The very high incidence of toxæmia in the adolescent, the occurrence of placental infarcts, the change in B.M.R from low to high, and the behaviour of the retinal arteries are of great interest, and the suggested relation between them may be correct. It is, however, scarcely necessary to point out that there is little evidence to support exclusively any given sequence of events. Dr BARTHOLOMEW's insistence that if the toxæmia is the cause of the placental infarcts then infarction should be generalised is countered by an argument brought out in the discussion of one of his papers[11]—namely, that the syncytium is very probably nourished from the maternal side and should therefore be unaffected by lesions of the fœtal vessels. Death of the fœtus may be associated with survival of the placenta, and yet there may be no toxæmia. The two arguments are equally valid in the present state of our knowledge and therefore do not add to or detract fr the factual findings. Doubtful points of this ki could be multiplied and raise the possibility of t facts being related in some other way than th suggested by Dr. BARTHOLOMEW.

Another theory of toxæmia, less securely bas on evidence, has lately been put forward by PAGE and is noteworthy in this connexion because i starting-point is again the raised incidence toxæmia in a clinical group—namely, thos developing hydatidiform mole. The sequence he is understood to be: "parasitic" action placenta—necessity for enhanced blood-supply—secretion of pressor substance by placental tiss to increase maternal blood-pressure—improved blood-flow through uterus at the expense of secondary toxic symptoms and hypertension T a uterus gravid for the first time, a normal placenta might present a problem similar to that of the rapidly growing mole, thus accounting for the increased incidence of toxæmia in primigravidæ The essence of the theory is a disproportion between placental growth and maternal blood-supply, however brought about. The rather fanciful (and, we imagine, diffident) analogy drawn between the placenta, "the excretory organ of the fetus," and the kidney is anchored to earth only by the slender thread of a pressor placental extract Since the significance of the renal pressor substance is still sub judice, and since the presence of acetylcholine, a vasodilator, is still on the waiting-list of placental problems, the arguments are far from conclusive On general grounds it cannot be denied that toxæmia is quite likely to be the result of abnormal placental activity. Attempts to pin this down to something definite are therefore not open to criticism on the grounds of inherent improbability, but they should be scrutinised carefully for their scientific validity. The chemical constitution of the placenta is different in many respects from that of other organs.

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[7] Denk, W, *Zbl Chir* 1936, 63, 2
[8] Vogel A, *Fortschr Ther* 1938, 5, 245
[9] *Lancet*, Jan 21, 1939, p 156
[10] Colvin, E D, and Bartholomew, R. A, *Amer. J. Obstet Gynec* April, 1939, p 584
[11] Bartholomew and Colvin, *Ibid*, 1938, 36 969
[12] Page, E W, *Ibid*, February, 1939, p 291

THE VOICE OF NATURE

"SYMPTOMS are universally available; they are the voice of nature." These words of Dr JOHN BROWN, the author of "Rab and his Friends," are quoted in a lecture in which Prof JOHN RYLE[1] asks for more careful study of the subjective phenomena of disease. With the aid of instruments and methods of precision, the extent of many morbid changes can be accurately measured. Not so symptoms; yet their appearance often precedes that of signs and if they are intelligently studied and interpreted they may lead to earlier diagnosis.

Although it is true that most of the attributes of a symptom cannot be measured, its temporal qualities at least can be assessed with some degree of accuracy. As an example Prof RYLE speaks of angina of effort which lasts 2–5 minutes and disappears when the patient stands still. By contrast, the status anginosus of coronary occlusion may last for hours, or return in repeated storms during a period of hours or even days. Between the brief pain of early effort angina and the prolonged pain of cardiac infarction, one meets a pain of intermediate duration—perhaps a quarter of an hour—in people who have had angina for a long time. This is, moreover, induced more readily by effort and we may deduce from it that the vessels have grown narrower or more rigid, or that more of them are affected, so that the effects of myocardial anoxæmia are less easily corrected. Eventually angina may come on even when the patient is asleep, possibly through the influence of emotional dreams or possibly through the deficient oxygenation associated with shallow breathing. Thus in these cases the duration, the time interval for development, the times of occurrence and (except in the very nervous) the frequency of attacks of pain are all significant. Again, the chief characteristic of the hunger pain usually associated with duodenal ulcer (but sometimes also with cholecystitis, early pyloric carcinoma and certain nervous states) is that it disappears on taking food. If no food or medicine is taken it may last an hour or more but eventually passes off. In the same individual under constant living conditions the duration and food-pain interval are remarkably constant. Hunger pain is absent before breakfast but almost always develops before lunch and again between midnight and 2 A.M.—the longer interval after the last meal being attributable perhaps to the slowing of digestion during sleep. These time relationships express a specific physiological disturbance which illustrates the natural gastric rhythm. When the pylorus narrows, the food-pain interval alters; the pain appears soon after the ingestion of food in response to the effort of the stomach to overcome the obstruction. Prof RYLE reminds us that pain in the right iliac fossa has many causes other than appendicitis. Some patients describe their pain as continuous for hours on end and recurring day after day; others describe it as intermittent, occasional and transient. The point to be borne in mind is that neither description fits our conception of any known inflammatory pain. Both types of pain are common in nervous persons and, in both, abuse of purgatives may be a contributory cause. Proctalgia, a rectal spasm, is a more definite example of a neurosis, affecting the overworked and emotionally unstable. It usually occurs in the small hours, lasts but a few minutes, and is unrelated to fullness of the bowel or excess of flatus. Its time behaviour distinguishes it at once from the pain of rectal carcinoma or anal fissure. Supra-orbital neuralgia, associated with frontal sinusitis, is likewise apt to recur at the same hour every day and migrainous headache tends to show a certain periodicity in any given case.

These temporal qualities are of great diagnostic importance and well repay the time and trouble required to elicit them. The same may be said of other symptoms besides pain. For instance, the duration, frequency and special time-incidence of recurrent loss of consciousness may be of real value in differential diagnosis. Fainting, unlike epilepsy, does not occur in bed at night. Epilepsy is the more likely of the two to return frequently and without the obvious relation to predisposing events which characterises fainting. Pyknolepsy is remarkable for the extreme frequency of the episodes, which may number fifty a day; it affects children before puberty and has a good prognosis. Prof RYLE recalled a mnemonic informing the student that the hemiplegia of embolism arrives in seconds, of apoplexy in seconds or minutes, of thrombosis in minutes or hours, of inflammation in days, weeks or months, and of tumours in weeks, months or years. Other fruits of temporal observation are that in the absence of pregnancy early morning vomiting is almost always due to gastritis; that morning diarrhœa points to achlorhydric gastritis; that chronic diarrhœa with 16–20 stools a day suggests ulcerative colitis; and that whereas diurnal frequency of micturition is commonly of nervous origin, nocturia is likely to be caused by organic disease, either local or general.

Mr ALBERT BOYCE BARROW, sometime senior surgeon at King's College and the Royal Free Hospitals, died on Monday as the result of a motoring accident. He was in his ninety-fifth year.

Mr FREDERICK SWINFORD EDWARDS, who died in London on Monday at the age of 86, joined the staff of St Peter's Hospital in 1881 and was also consulting surgeon to St Mark's and the West London. He had been president of the subsection of proctology, Royal Society of Medicine.

We also regret to announce the death on May 29 of Dr JEAN RENÉ PERDRAU, pathologist on the staff of the Medical Research Council and an authority on the virus of herpes. He died in Guy's Hospital after a short illness.

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[1] Ryle J A, *St Thos Hosp Gaz* April 1939 p 5[illegible]

ANNOTATIONS

ORANGE JUICE FOR BREAST-FED BABIES

SOME years ago Sir Frederic Still[1] scandalised many of his juniors in the pædiatric world by asserting that orange juice was unnecessary for breast-fed babies "under the conditions of feeding of the mothers which prevail in this country" The younger physicians were inclined to dismiss this as the dictum of one out of touch with modern developments, and they pointed to the fact that breast-fed babies could certainly suffer from deficiency diseases, of which, while scurvy was certainly a great rarity, rickets was not uncommon and iron-deficiency anæmia fairly frequent Still is, however, supported by Gyllenswärd[2] of Stockholm, who maintained at the Northern Pediatric Congress at Oslo that fruit juice was not only unnecessary but might even be harmful. He gave alternate babies of a group a teaspoonful of orange juice daily from two months to four months of age and thereafter two teaspoonfuls daily, the others receiving only breast milk An inadequate supply of breast milk, or any intercurrent affection apart from digestive upsets, led to the exclusion of the baby from the investigation. Failure to gain weight is said to be an early sign of vitamin-C deficiency, but there was no evidence that orange juice had any effect on the weight of these children On the other hand, there was definite evidence that the babies receiving orange juice had more irregular and more frequent evacuation of the bowels, and their stools sometimes showed signs of faulty digestion. Similar investigations were made using lemon juice or tomato juice with similar results, tomato juice seeming to be the least easily digested. Some babies, too, developed various skin eruptions when they were having fruit juice Gyllenswärd suggests that if child-welfare centres urge the use of orange juice the public may think that breast-milk is not a complete food He has known babies who lost their taste for the breast when given fruit juice and he even alleges that fruit juice may be responsible for acute infections of the throat He concludes that if any preventive treatment is required it should be directed towards making sure that the mother's diet contains a sufficiency of vitamin C Even this is not as simple as it sounds, for in the discussion that followed Gyllenswärd's paper C W Herlitz estimated that in the worst cases of maternal undernutrition this would mean giving a lactating mother from four to six oranges daily

TREATMENT OF AGRANULOCYTOSIS

AT a time when more and more cases of agranulocytosis are being reported, a study of their treatment and mortality is welcome, and it is supplied by Jackson and Tighe[3] in a survey of some 390 cases recorded since 1933. They define carefully what is meant by agranulocytic angina, with its many synonyms, and exclude some cases diagnosed on insufficient data. The ætiology remains obscure, but it is generally agreed that amidopyrine and its congeners have been often responsible In the absence of treatment the fatality-rate has been nearly 80 per cent, with only a small reduction among those getting general hospital care or "specific" remedies in insufficient doses Transfusions and X-ray treatment seem to have been useless In a few cases bone-marrow extract and "leucocyte cream" have been given with results encouraging further trial. Other cases have been treated successfully with adenine sulphate This material is a degradation product of pentose nucleotide which is known to raise the leucocyte count. According to Jackson and Tighe the mortality among cases treated with pentose nucleotide is only 35 per cent and they regard this as the most promising direction of treatment.

WELFARE OF THE BLIND

BEFORE the passing of the first Blind Persons Act in 1920 the Government made no special provision for the care of the blind, who were left to the charity of present and past generations The President of the Local Government Board appointed in December 1917, a committee to advise him in the necessary action and successive Ministers of Health have since kept this useful body in being. It represents all groups interested in the welfare of the blind, including representatives of local authorities and of the blind themselves, and for many years it has had the advantage of the sympathetic leadership of Lord Blanesburgh Under the act of 1920 provision was made for grants from Government funds, and the old-age pension was given to blind people at 50 instead of the normal 70 years At the same time local authorities were made responsible for the welfare of blind persons in their areas, with wide powers Fortunately many local authorities found already existing in their districts voluntary associations which had wide experience of this work Even so, the new duties were not simple and in 1927 the advisory committee issued a practical handbook to be a guide in their application. The third edition, now published[1] has been rendered necessary by the passing of the Blind Persons Act, 1938 Three important changes are the lowering of the pension age from 50 to 40 years, more generous consideration of the means of blind persons for the purposes of grants, and the complete divorce from the poor law of assistance to blind persons other than medical assistance or assistance in an institution The advisory committee deal broadly with their subject, covering the definition and incidence of blindness, the development of services, classification and its limitations, the trained blind, and the unemployable blind (some 80 per cent of the total), social needs, organisation, and the prevention of blindness Of all these, perhaps the last is the most important The handbook brings out the steady reduction that has taken place in blindness due to ophthalmia neonatorum In 19[illegible] there were in England and Wales only 10 blind children under one year of age and 196 between one and five years, of the total of 67,534 blind persons many of whom, however, owed their blindness to this cause But there are other known causes of blindness for which comparatively little is still done —for example, progressive myopia For many years a committee of the Union of Counties Associations for the Blind have been collecting detailed information as to measures of prevention, and it is satisfactory that their useful work will not come to an end with the disappearance of the Union of Counties Associations, for the Minister of Health has appointed a standing committee to carry it on, under the ch manship of Mr P M Evans who was chairman of the union's committee The object of every worker, says the handbook, is to help the blind to lead a normal life, to recognise their limitations in a natural way, as a lame man recognises that he cannot run a race, to help them to mix with other blind people, but also with the sighted, to teach them to train themselves to do well the many things the blind are able to do well, and above all to help them not to think of themselves as "blind in a blind world"

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[1] Still, G F, *Lancet*, 1933, 2, 1103
[2] Gyllenswärd, C, *Acta pædiatr, Stockh* 1939, 24, 318
[3] Jackson, H, jun, and Tighe, T J G, *New Engl J. Med* May 4, 1939, p 729

[1] Handbook on the Welfare of the Blind 3rd ed London H M Stationery Office Pp 54 1s

ANGINA PECTORIS AND XANTHOMATOSIS

INVESTIGATIONS by Harbitz into the deposition of xanthomatous substances in the body have inspired a Norwegian physician, Carl Müller,[1] to make further inquiries Having once begun to associate xanthomatosis (in the form of xanthelasma of the skin and xanthoma tuberosum) with angina pectoris, he was soon impressed by the familial character of this association ,, indeed including his first case of xanthoma tuberosum and angina pectoris observed in April, 1937, he has collected 79 cases of xanthomatosis, distributed over 17 families, in 69 of which there were signs of heart disease and in 59 angina pectoris Most of his patients were employed in business or professions, and there was not a single representative of the "working classes," although much of Müller's practice is among them The association of the two conditions is explained by saying that xanthomatous deposits are laid down in the coronary arteries and give rise to ischæmia of the myocardium with resultant attacks of angina pectoris In 5 of Muller's cases the deposits were held responsible for valvular disease of the heart, but patients may also show xanthomatosis without signs of heart disease The two conditions may, he says, be found together at almost any age

THE INSANITY DEFENCE

THE ordinary rules of procedure in criminal as well as in civil trials lay down that the evidence for the Crown or the plaintiff shall be heard first, and then the evidence for the defence Exceptions are made where the judge considers them necessary, but that is the ordinary practice Dr L A Weatherly, that veteran and never ageing expert in forensic psychiatry, urged before the Medico Legal Society on May 25 that a rule of procedure should be introduced laying down that, when insanity is pleaded as a defence to a criminal charge, the expert evidence called by the Crown to rebut that defence should be heard after the expert witnesses for the prisoner have spoken Such a rule might be made by decision of the Court of Criminal Appeal, by the rule committee of the Supreme Court, or, of course, by Parliament In support of his argument he recounted—without a single note—five cases in which he had been concerned at various times during this century In four of them the procedure he proposed had been followed by direction of the judge In two of them the Crown experts had refused to go into the box, so clearly was the defence of insanity made out, and in two others they agreed with the defence In the fifth case the judge insisted on hearing the rebutting evidence first The Crown expert said he could find no trace of insanity in the prisoner, and Dr Weatherly, who followed for the defence, was laughed out of court The prisoner was sentenced to death, but was reprieved and four days later was sent to Broadmoor, hopelessly insane Shortly afterwards the judge's own brother, a doctor, became suddenly insane and died in an asylum The judge sent for Dr Weatherly and confessed that the insanity defence had always been to him like a red rag to a bull, but he now realised that he had sentenced many insane persons to death, and had been quite wrong in that particular case in allowing the medical witness for the Crown to go into the box before the evidence for the insanity defence had been heard. Dr Weatherly's point is that this arrangement should not be left to the discretion of the judge, and arising from that point he made another—namely, that the Medico Legal Society should appoint a standing committee on legislation, to investigate cases in which it appears to them that the law should be altered or amplified, and to promote the necessary legislation This certainly seems a possible function of a body which exists to reconcile the differences between law and medicine Whether Dr Weatherly's example is a fitting one for the attention of such a committee is, as he recognised, debatable, for, as Judge W G Earengey pointed out in the discussion, the rule he proposes has been very generally adopted There is, however, scope for a considerable variety of medicolegal legislation The society could render valuable assistance, for example, in such matters as the use and regulation of blood tests in bastardy cases, the treatment of delinquency, and the reform of workmen's compensation

TUBERCULIN TESTS IN CATTLE

WHILE the tuberculin test in man and in cattle has a fundamental similarity in indicating sensitisation due to tuberculous infection there are important differences between the two species both in the sphere of usefulness of the test and in the technique of its application In man the chief use of tuberculin testing lies in the negative reaction to exclude tuberculous disease in clinically suspect cases and to identify young adults who are in contact with the disease but have still to acquire a sensitising first infection (e g nurses and medical students) The positive reaction—except in infants and in adults known recently to have been negative—is of minor use, since it cannot satisfactorily distinguish tuberculous infection which is progressive from that which is quiescent or healed In cattle, on the other hand infection and disease are more nearly synonymous, all naturally acquired tuberculous lesions being regarded as a potential source of danger whether accompanied by clinical evidence or not Since the test in cattle can be made sufficiently sensitive for the positive reaction to detect, and the negative to exclude, tuberculous lesions with considerable accuracy, the two reactions are of equal value and the test has rightly become the sheet anchor in the eradication of bovine tuberculosis from herds

On the technical side the chief differences between herd and human testing are due to the much lower sensitivity of cattle Although—as for man—the intracutaneous technique is the one generally employed in this country a double test is widely used to enhance the reaction the tuberculin being injected in undiluted form—a procedure that might produce severe local necrosis and a febrile response in a highly allergic human being While this method on the whole gives satisfactory results in the field, a number of difficulties and discrepancies are associated with it Among them may be mentioned the confusing non-specific reactions that are sometimes produced in the skin of normal animals with certain types of tuberculin the desensitisation that may occur around the site of an injection and possibly mislead when routine tests at short intervals are practised, and the alleged "doping" of tuberculous animals by a previous injection of tuberculin in order to render a test negative. These and other anomalies have been investigated by Prof. J. B Buxton, F R C V S, and Mr R E. Glover, F R C V S, under the auspices of the joint tuberculosis committee of the Medical Research Council and Agricultural Research Council, with the result that the position has been clarified.[1] The investigators decide in favour of an ammonium-sulphate precipitated synthetic medium tuberculin as providing a balance between adequate potency on the one hand and a minimum of anomalous reactions on the other, a view which is admittedly based upon comparative testing rather than on extensive post-mortem evidence They find, furthermore, that interference of one test with the next by local desensitisation of the skin can be avoided if due care is taken to choose sites sufficiently distant from one another, and they show also that it is very difficult to mask a reaction to the double intracutaneous test by any form of doping

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[1] Nord Med April 22 1939 p 1183

This clarification is all to the good What is now required is a general agreement upon the preparation and type of tuberculin for use in cattle, and upon the best method for standardising its potency. Besides the more usual synthetic medium tuberculins there are purified derivatives such as P.P D, now familiar to those engaged in human testing, and knowledge of their value in veterinary work would be welcome The lack of additional knowledge need not, however, hold up the advance of herd-testing, for in its absence it has been possible to reduce bovine tuberculosis in certain areas of the United States to small proportions.

MARVELS AT THE ROYAL SOCIETY

EVERY year the Royal Society stages an exhibition of wonders for the guests at its conversazione, and in the afternoon the exhibitors try to make clear the obscurities of their work to representatives of the press This year the exhibition, held on May 24, had to face not only the local competition of the Royal Academy but the more remote counter-attractions of a fine-weather Derby It was therefore fitting that the visitor should be greeted on arrival by good news—namely, that the bedbug, which has given as many sleepless nights to local authorities as to tenement-dwellers, is being simply and safely eradicated in Liverpool and elsewhere by a modification of the method described in THE LANCET two years ago (1937, 1, 530), using heavy naphtha Mr. S A Ashmore, Mr J Macmillan and Mr. A. W. McKenny Hughes had borrowed a model gas-proof room from the A R P authorities for their demonstration The naphtha is sprayed on light cotton screens hung on batons some 3 in from the walls, and the resulting vapour is said to be lethal to the bedbug in 18–24 hours but harmless to man Nearby the amplified drone of a fly's wings could be heard varying with the changes that Mr Gottfried Fraenkel and Mr R A Davis made in its atmospheric pressure Upstairs even the non-technical visitor could appreciate Capt Guy Dollman's complete set of armadillos; the early daguerrotypes and talbotypes shown by Mr. George Gabb to celebrate the centenary of photography; the General Electric Company's field emission electron microscope, in which the electrons shot off from a fine metal point at the centre of an evacuated bulb form a highly magnified and characteristic pattern on the fluorescent wall of the bulb; the trade-secrets of ancient Peruvian potters as exposed radiographically by Mr H J Plenderleith and Mr A. Digby; and the National Physical Laboratory's meteorological balloon which sends out a continuous record of temperature and pressure on its short-wave wireless transmitter. The exhibit of the biophysics laboratory of University College, London, came nearer the medical field. Here an electrical stimulus was applied at one end of a piece of frog's nerve and the response was picked up at the other and shown as waves on a cathode ray oscillograph, the rate of transmission of the impulse—and, when two stimuli were applied, the refractory period—were demonstrated clearly as distances on the screen Dr Adolf Schott showed an electrical ergograph he had designed for use with the gaseous exchange apparatus he exhibited last year. The subject drives the rotor of a motor generator by hand, and the electrical equivalent of the work done is shown directly on a wattmeter This should be helpful in determining exercise tolerance both in health and disease

WOOD AND BONES

ORTHOPÆDIC surgery is akin to carpentry: both crafts share many of the same tools and they differ mainly in the materials they use. Or rather one should perhaps say that they used to differ, for there is a recent report from Rumania of the introduction of wood into orthopædic surgery. Theodorescu[1] came upon the idea by chance. He was consulted by a patient who complained that for several months she had had a painful lump in her leg at the site of an old injury. When this was incised a splinter of wood more than three inches long was found buried deep in the leg: it had been there nearly five years without causing symptoms, and there was hardly any reaction in the surrounding tissues, which seemed to have treated it with a "tolerance almost amounting to indifference." Theodorescu decided to utilise this property of wood in the internal splinting of broken bones After experimenting on dogs he applied the method in six human patients with fractures, and was successful in all of them. In most of the cases he fashioned a batten of wood which he used as an intramedullary peg He deliberately used a peg of oblong cross-section so as not to block the marrow cavity Before operation the wood (preferably oak or acacia) is roughly shaped, and sterilised in an autoclave, which allows it to retain its valuable property of absorbing moisture from the tissues in which it is placed, thus causing it to expand slightly and so to fit more tightly in the bone; boiled wood loses this property. So far from having trouble with infection Theodorescu believes that the natural juices of the wood are actually antiseptic, an opinion based on his observations in a case of compound fracture

Two almost identical cases of fracture of both bones of the forearm provided an excellent opportunity for controlled experiment. in the first case the radius was mended with wood and the ulna without internal splinting, while in the second case the converse was done, and in neither did the foreign substance modify in any way the formation of new bone But if Theodorescu shows a pretty appreciation of the value of controlled experiment, he does not appear to give due weight to the importance of time When he wrote his report only two months had clapsed since the operation on his most recent case, and his first case had been done only six months earlier. His last note on the case with a compound fracture states that "35 days after operation the skin wound is almost completely healed." If the lady with the splinter in her leg began to have trouble from it after nearly five years, is it safe to say after only eight months that these fracture cases with big splinters buried in their bones are yet, so to speak, out of the wood? Time will show.

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[1] Tuberculin Tests in Cattle, *Spec Rep ser agric Res Coun, Lond* No 4 H M Stationery Office 1s 6d

[1] Theodorescu, M, *Revista de Chirurgie* (Bucharest) 193[illegible], 6, 835

THE AMERICAN SUBMARINE DISASTER

ON May 23 the U.S. submarine *Squalus* sank in 240 ft. of water off the coast of New Hampshire with about 60 men on board. Three methods were available for saving the lives of the crew. The captain suggested an attempt to blow out the water with compressed air and so to raise the submarine to the surface, but this suggestion was vetoed for technical reasons by the naval experts. The ship was equipped with the "Monsen escape lung" which is similar in principle to the Davis escape apparatus used in British submarines. This was regarded as a last resort, however, either because of the partial flooding of the ship, or because of the danger of using it at so great a depth. It may be of interest to discuss the latter danger.

One of the most serious risks that deep sea divers face is the accident known as "squeeze." As we recently pointed out,[1] a descent of only two feet increases the total pressure on the diver's body by about a ton. The diver is normally encased in an incompressible helmet and a compressible suit. Compressed air within this suit keeps the pressure within equal to the pressure without. If this increased pressure fails, air is squeezed from the compressible suit into the incompressible helmet and in extreme cases the man himself may be moulded into his own head-piece. This happens, however, because of the incompressibility of the helmet. Native divers, using no diving suit, are said to have descended to immense depths without harm. Indeed it is difficult to see why any harm should be done directly by water pressure. The tissues of the body, with the exception of the bones, behave in this respect as liquids, and pressure, as Haldane has shown[2] is transmitted instantly, equally, and undiminished in all directions through liquids. The body is therefore no more likely to be squashed than is a volume of water. Moreover it should be remembered that the internal pressure of water has been calculated as being thousands of atmospheres and it is therefore unlikely that tissues composed largely of water would be seriously inconvenienced by being subjected to some seven additional atmospheres. Since the time of Paul Bert[3] it has been realised that the dangers to which divers are subjected, apart from "squeeze" and minor inconveniences due to closed eustachian tubes, are the results of respiratory disorder and not of mechanical pressure. If the oxygen pressure in the respired air were continuously adjusted a human being could undergo with impunity immense changes in the external fluid pressure. On this fact the efficiency of the Davis apparatus partly depends. The apparatus has only been tested once on a large scale, in the wreck of the British submarine *Poseidon*. It then worked exactly according to plan, the only fatality being due not to any fault in the apparatus but to the failure of its wearer to breathe freely during his ascent.

The third method available to the imprisoned crew of the *Squalus* was the one adopted—the use of a diving bell of new design. This is a cylinder enclosed in a bell. In the bell is a diver whose duty it is to fix the rubber rim of the inner cylinder over the hatch of the submarine, with which it makes an airtight joint. Within the cylinder are two compartments, one above the other. The upper one, which has hitherto been closed, contains air, the lower one water. After union has been made with the submarine, the water is expelled from the lower chamber, the hatches are opened and the men climb through into the upper chamber. Both hatches are then closed and the bell is hauled to the surface. Except for a temporary hitch on its third journey, the bell worked well. Its advantage appears to be that nine men can be carried at once, but it has several disadvantages. The exact scene of the disaster must be known, the bell must be brought to the spot, and proper connexion made to the submarine—a task which cannot always be easy. It is hardly likely that any such device can replace the individual escape apparatus of Sir Robert Davis, which is always at hand and needs no assistance from without in bringing the men to the surface.

TECHNICAL REQUIREMENTS OF PASTEURISATION

WHEN the rules are closely followed pasteurisation destroys tubercle bacilli and other pathogenic organisms which may be present in raw milk, while it does not modify its nutritive qualities in any material way. This *dictum is based on so large a body of* scientific experiment as to be accepted by all unbiased observers. The need for pasteurisation is equally admitted by experts and discussion now centres round the technical problem of the best method for its performance and for ensuring its success. At present the only method officially recognised is what is called the "holder" process in which the milk is raised to a temperature not below 145° F. and not above 150° and held there for not less than 30 minutes. This method is efficient and gives a considerable margin of safety; much of the milk consumed in this country is so treated. As a technical process and from the trade standpoint it has certain drawbacks, such as the cost of installation (for the larger plants), the space occupied in the dairy, and in particular the outlay of time. From the strictly trade aspect therefore it is always kept in mind that the official holder process is not of necessity the last word and that other methods of pasteurisation may be devised which are equally safe and reliable. Indeed on the Continent methods involving different time and temperature factors are extensively used and accepted as satisfactory. Taking as the yardstick of efficiency the tubercle bacillus, the most resistant organism likely to be present, we must remember that its destruction by heat is a factor of time *and* temperature: the higher the temperature the shorter is the period of exposure to ensure destruction. Theoretically higher temperatures for shorter periods are equally efficient, the chief drawback of the shorter exposure being the difficulty of effective control. The question of efficiency and adequate control for shorter exposures is now being tested in a number of laboratories. A recent paper[1] by Mattick and Hiscox from the National Institute for Research in Dairying, University of Reading brings out well some of the essential points. Their experiments made with several plants under commercial conditions, show that 162° F. for 15 seconds is efficient as judged by the destruction of tubercle bacilli, offers a good margin of safety and does not damage the cream line (a point of interest to the trade). The phosphatase test, which has proved reliable for the control of pasteurisation with the holder method as officially defined, appears to be equally efficient when pasteurisation is carried out for a shorter time at a higher temperature. It is satisfactory to learn that this valuable test is available for the whole of the time-temperature range. The authors agree that high-temperature short-time pasteurisation requires rather more control than does the official requirement but they consider that effective control is possible. They do not go further now than to suggest that there is a case for considering the shortened process as an alternative to the holder process, but they do advocate that it should be permitted now for the pasteurisation of by-products —skim milk, whey, &c.—as required under the Tuberculosis (Affected Herds) Scheme, 1938 While at present there may be insufficient data available to justify any modification of official practice for milk intended for human consumption, it is proper that other methods should be submitted to detailed scientific study in the hope that a process may be found that is not only safe but convenient for the trade and easy to control effectively.

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[1] *Lancet*, Feb 15, 1939, p [illegible]

[2] Haldane, J S Respiration London 1935 p 331

[3] Bert, P La Pression barométrique Paris, [illegible]

[1] Mattick, A T R, and Hiscox E R, *[illegible]* Mar [illegible] 1939 p 157

ASPIRIN AS A POISON

PERHAPS no drug is so well known to the public as aspirin, for it is advertised everywhere and under many names as a panacea for many ills Its vehicle is often the hospitality which provides it for the friend's headache, in the spirit that "even if it doesn't do you any good, it can't do you any harm." It is only occasionally that we have a reminder that aspirin, acetylsalicylic acid, is a remedy that can be abused to the danger-point or even employed for self-destruction In 1935 Dyke[1] recorded a case in which some 435 grains gave rise to toxæmia involving the hepatic, renal and nervous systems; recovery followed repeated lumbar punctures, a procedure which has been found useful in barbiturate poisoning Several suicides by means of aspirin have lately been mentioned in the press, and in a case coming before the coroner at Epsom, Dr. Eric Gardner, in reporting the recovery of 60 grains from the body, said that this amount might well be fatal. The lethal dose varies widely from person to person, and though aspirin is astonishingly safe compared with most other effective drugs there is certainly room for greater discretion in the use of one that is so often taken in substantial quantities without good reason.

ANÆSTHETICS IN WAR-TIME

IN deciding in advance what would be the anæsthetic methods of choice in another war we can fortunately draw on a good deal of experience from the last. We have learned, for example, the danger of spinal analgesia in patients who are already shocked, and the advantages of non-toxic inhaled anæsthetics. There are now, however, agents at our disposal which were not available in 1918, and the use that can be made of them was well outlined at the International Congress of Military Medicine at Washington a week or two ago. The methods of anæsthesia for war surgery must naturally vary according to whether the medico-military establishment is in the forward or the rear zone. Far enough in the rear the principles established for civil surgery can be followed In the forward zones it is a different matter. Here no major surgery is carried out, yet there is ample need for anæsthesia for those who have to be made fit to go safely on towards the base. The anæsthesia needed is usually brief, and the means for procuring it must be simple and portable. Gas machines, for example, have no place in this type of surgery, whereas the rapidly acting barbiturates given by intravenous injection might well be of the highest service Though some authorities think that any anæsthetic beyond ether and perhaps nitrous oxide is a refinement unsuitable for war-time conditions, others believe that such agents as hypodermic injections of morphine are also often needed. Sodium amytal can be used with great benefit to patients seriously wounded who have to undergo further transport, and patients so treated are more likely to survive exposure and delay. As far as the doctor's convenience goes, the apparatus required for intravenous anæsthesia can be carried in a small case strapped on the back[1]

STUDENTS AND MILITARY SERVICE

THE Government has recognised that calling up for military training of men between the ages of 20 and 21 years would prejudice the future prospects of students more severely than those of other men At the end of last week the Minister of Labour announced that undergraduates now at universities or university colleges will be allowed to postpone their [illegible] until the end of their approved course of study. When he registers next Saturday the student will apply for a form to be filled in with a certified statement that he is a full-time member of a university giving the date at which his course is due to terminate The same applies also to students who are entering next October. It is understood that these arrangements will also apply to medical and dental students, whether or not they are members of universities, and it may be presumed that in their case the approved course of study terminates when they qualify. What form of military training will then be required has not yet been announced One of the few subjects on which medical educationists agree is that anatomical and physiological studies must somehow be brought into far closer relation with clinical work, and a six months' holiday of military service between the laboratory and hospital stages of the curriculum would clearly have been an educational disaster. From the narrower angle of national service it is hard to see how six months postponement of qualification could have been justified on the ground of national emergency; in any really acute emergency these students would have been prevented from leaving their medical schools till they had qualified. The time for military training is immediately after qualification and not before.

DR T. R FORSYTHE, deputy medical superintendent of the Kent County Mental Hospital, Maidstone, has been appointed a commissioner of the Board of Control, in succession to Dr. A. E. Evans, who has been appointed a Chancery visitor.

On June 13 at 3 P.M., at the London School of Hygiene, SIR EDWARD MELLANBY, F R S, will deliver the Stephen Paget lecture at the annual general meeting of the Research Defence Society He will speak on the experimental method in the conquest of disease

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[1] Dyke, S C, *Lancet*, 1935, 2, 613

[1] Jarman, R, *Lancet*, April 8, 1939, p 845

SPECIAL ARTICLES

THE BIRTH-RATE AND PRESENT-DAY *DIFFICULTIES* *

BY VISCOUNT DAWSON OF PENN, F R C.P

I MAY plead a certain justification for speaking at Welwyn Garden City, firstly because I have been for many years interested, perhaps even concerned, in the problem we are discussing, and secondly because your distinguished founder consulted me, during your prenatal existence about the year 1920–21, on the best lay out for the provision of health and education in a new community having regard to the trends of progress rather than the forms of established custom Beyond the pleasure it is to me to visit you in your young and vigorous maturity this is a good platform on which to discuss certain problems of population which unless they are boldly faced may place our country in jeopardy

REPRODUCTION RATES

To come to close quarters with my subject, let me invite your attention to two charts for which I am indebted to Mr D V Glass of the London School of Economics The gross reproduction rate is the average number of girl babies—potential mothers—born to a woman throughout childbearing age If we allow for some of these girls not surviving throughout childbearing age we have the net reproduction-rate The net reproduction rate reached its peak in 1881—viz, 1·5—that is, 100 women produced during childbearing age 150 future mothers Thenceforward the net reproduction rate fell, at the commencement of this century it was 1·25, by 1925 it was below unity, by 1933 it had fallen to 0·76—in other words, 100 mothers were only producing 76 future mothers—a grave decline, replenishment of the nation was failing Many would reply "Our population is *still increasing in numbers*" But what is the *quality* of that population? Examination of chart II will tell us Records to the left of the perpendicular line are actual, those to the right of that line are what the records will be in the future if the present trend continues In 1880 those under twenty were 46 per cent of the population, whereas those over sixty were 7·5 per cent of the population, note how continuously the younger people have diminished and the older increased, note how dangerously the curves of the young and old are approaching each other Thus the proportion of youth to age was, in 1880 6 to 1 (and no doubt both the birth rate and death rate were then too high), in 1931 the proportion was 3 to 1 whereas in 1940 it will only be 2 to 1, and with continuation of the present trend youth and age will by 1962 have reached equality of numbers, not enough new lives to reinvigorate the nation—not enough steam to make the wheels of community life go round Given existing trends, what a prospect—vigour, adventure, love and laughter beginning to fade!

This thing has not happened but it threatens, the decline of the school population is a portent Here is a strong call to intelligent anticipation To remedy it does not mean return to the high fertility of Victorian days such would neither be possible nor desirable for be it remembered that the high birth rate of that wonderful age was only rendered possible by the coexistence of a high infant death rate, which we pride ourselves on having reduced from 160 to 53 per 1000 No, *a moderate increase of births would* serve the purpose provided at the same time we plan for *quality* of race But quality requires an adequate turnover

The net reproduction rate should be above 1—indicating that 100 mothers should produce rather more than 100 future mothers—that is, replace themselves and a bit over *Then we men must not be* allowed to perish, and there are the unavoidably childless marriages, the women who do not marry, the parents with only one child— single child sterility" Making these allowances I put it forward that a family of four, wisely spaced, is a good family, that wherever possible no family should be less than three

This statement is based on the interests of racial survival and strength But surely it is equally sound from the point of view of the family The completion of the maternal cycle at suitable intervals conception, gestation, parturition, lactation and the activities of the glands which control them, make for preservation of beauty of body and mind Children make the home, and keep their parents young, while educating each other On the other hand the woman who intentionally ends her maternity with one child is contracting, to her hurt, the kingdom her body and mind were meant to possess, and often learns her mistake too late Moreover the home of the only child is only too apt to be clouded with anxieties over health and is little suited to successful upbringing

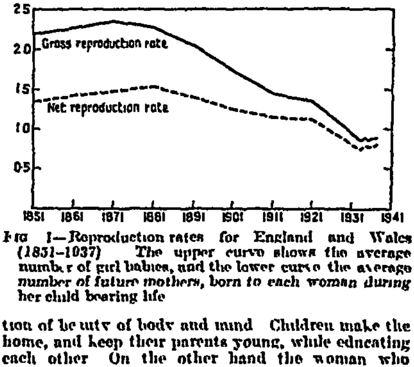

FIG I—Reproduction rates for England and Wales *(1851–1937)* *The upper curve shows the average* number of girl babies, and the lower curve the average *number of future mothers, born to each woman during* her child bearing life

BIRTH CONTROL

Next to consider the causes of declining reproduction The dominant cause is birth control I suggest to you that no thinking person would wish to return to the conditions of the last century even if it were possible to do so No doubt large families served well that day and generation but their proportion of *6 to 1 as between under twenty and over sixty was* too high and was obtained by the operation of high death rates Indeed their uncontrol of the birth rate was only possible with a high infant death rate which was then about 160 per 1000 as against 53 last year Once the fall of the infant death rate became progressive, the fall of the birth rate had to follow It is one thing to have say, 9 births and of these 4 deaths (that is 5 children to rear) and another to have 9 births and 1 death (that is, 8 children to rear)

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* An address delivered at Welwyn Garden City on May 23

It is here useful to reflect that birth-control came into being as the result of social forces, not of evil intentions It got a strong hold in Catholic France as far back as 1840 owing to the operation of laws of inheritance. Birth-control exists in all civilised countries and is necessary and inevitable The mistake of today is its extension towards the point of suppression—a mistake which operates not only against the interests of the race but in the long view against the happiness of the individual In the first few years of married life the childless couple may have a good time, but thereafter there lies before them a vista of increasing unfulfilment.

It is however well to point out that there is a group—how large we do not know—of childless marriages due to failure of fecundity, in one or both partners Failure to conceive should never be allowed to extend beyond a year without resort by both parties to medical advice, for the science of reproduction is extending its boundaries

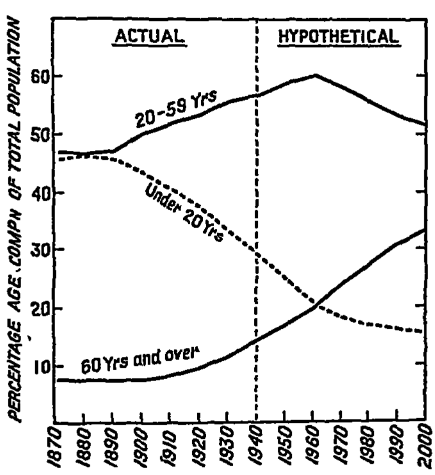

FIG 2—Age-composition of the population of England and Wales, assuming that fertility falls until 1960 and mortality until 1970, giving a net reproduction-rate of 0 566 from 1970 onwards.

The fact however remains that the dominating cause of this population shrinkage is due to birth-control. People think that because the population is still increasing all is well—forgetting to ask, "populated with what?" If once they realise that a population depends on its quality and worth, that if a nation is to live and be strong it must go on being born again by the steady reinforcement of new lives, they will see the necessity of adequate parenthood, and should they fail to contribute their share, the ageing part of the population will increase, pensioners will overtake producers, and the last state of unemployment will be worse than the first.

QUALITY OF THE CITIZEN

Side by side with adequate though controlled parenthood there must be a planning for high quality in the rearing of offspring, for Britain requires, even more than heretofore, capacity and fibre in its oncoming people It is abundantly clear that the cost of rearmament will require a contracture of expenditure on projects of social betterment. Would it not be wise to consider here and now what purposes should have priority of claim on the public purse? Surely a leading purpose is the building up of the best individual citizens and enough of them; for without this all else will be naught

And so to my next submission that reproduction is no longer the exclusive responsibility of parents but one in which the state has a share. England's polity has long been evolving on these lines—maternity services, free education, school meals—why not more complete comprehension?

Prof A W. Carr-Saunders has stated the case with clarity and force. Before birth-control "children were a forced levy," an inevitable accompaniment of fertile partnership; but with birth-control the community relies for its revenue of children on voluntary contributions Should otherwise willing parents be penalised by financial struggle? Should not the state assist those of limited means who play their part in this essential service, by contributing to the attainment of effective nurture? On the ways and means of securing these vital purposes committees are making inquiry under the leadership of Prof. Carr-Saunders and what follows are his suggestions

Grants might take the form of weekly allowances (in money or, perhaps better, tickets) progressing with each child up to a certain maximum in order to help maintenance, and above all the securing of good feeding Beyond this, housing accommodation suitable for young families, with easy access to the outer air and to nurseries and creches, should be available and at a rent within the means of the parents Such measures would link up with the various schemes for physical education and recreation, playing-fields, camps, scouts and guides which are gathering together their efforts to secure national fitness and welfare

And the reward would be citizens vigorous and happy and worthy to inherit this great country.

BARBITURATES BY POST

ON May 25, at the instance of the Pharmaceutical Society of Ireland, the firm of J Redfe[illegible] Ltd was prosecuted and fined £2 in the Dublin district court for selling phenobarbitone, included in a preparation called Renesol, in a container not distinctly labelled with the name of the drug It was alleged that the defendants, a limited company registered in England with a nominal capital of £10[illegible], used its Dublin offices for sending to England by post as a cure for epilepsy this drug, the sale of which without a medical prescription is illegal in England. Since the sale of barbiturates is not restricted in Eire to doctors' prescriptions, the Eire authorities cannot stop the practice of sending these drugs by post to England; they can only take steps to enforce the proper labelling of the drugs. Evidence was given that only 3 per cent of the business was done with customers in Ireland, most of it being done with customers in England; that the sheet of instructions sent out with the drug said that the capsules contained no habit-forming drug; and that some of the accompanying printed matter prescribed [illegible] capsules a day, whereas the officially recommended maximum was the amount contained in two capsules. Unless a means is found of putting a stop to the practice, there is danger that it will become extensive, and that Eire will be used as a base of operations for suppliers of banned drugs to addicts in Great Britain.

TRANSFUSION OF STORED BLOOD.—The health commissariat of the U S S R announces a competition for an apparatus for storing and transfusing blood; it must hold 500 c cm, its construction must be simple, and it must be strong and easily transported and allow of rapid heating The competition is open until Nov 1, 1939, and Prof. S I. Spasokukotsky will preside over the committee of award.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 23–26, 1939

(Concluded from p 1229)

Penal Cases reported by the Dental Board

THE council ordered the erasure from the Dentists Register of the names of John Forbes McDonald Connar, registered as of 33, Templemore Avenue, Belfast, "Dentists Act, 1921," and Arthur Groom, registered as of 83, Antrim Road, Belfast, "Dentists Act, 1921" The board had found that Groom, although he had been declared by the Ministry of Labour for Northern Ireland as unsuitable for service in connexion with dental benefit, had done work on insured patients and that Connar had signed certificates and drawn money as though he himself had done the work

RESTORATIONS TO DENTISTS REGISTER

After deliberation in camera the President announced that the names of Thomas Gordon and Albert Charles Hellyer Taylor had been *restored* to the register

Charges against Medical Practitioners

DRUNKENNESS AND MOTORING OFFENCES

A number of practitioners appeared before the council in consequence of conviction for offences involving drunkenness In five of these cases judgment had been postponed from previous sessions, the council heard the evidence which the practitioners brought that their conduct had been satisfactory in the interval, and their assurances for the future, and decided not to order their names to be erased from the register In the remainder of the cases the council *postponed* judgment until the next summer session

UNLAWFUL IMPRISONMENT OF A MENTAL PATIENT

Abramo Litvak, registered as of Yonah Hanavi Street, 13, Tel Aviv, Palestine, M D U Bologna, 1918, appeared before the council on a charge of having between March and July, 1935, without authority detained a girl named Hava Ida Rubin in a locked room and a locked chicken house, and provided those places to conceal her, for which he was sentenced by the district court of Jaffa to twelve months' imprisonment, which was reduced on appeal to the supreme court of Palestine to six months' imprisonment It was further alleged in the charge that Hava Ida Rubin was a person of unsound mind and a patient of respondent He was accompanied by Mr Neil Lawson, counsel, instructed by Messrs G Mervyn Heap and Co, solicitors

Mr Stephen S Howard, counsel, instructed by Messrs Waterhouse and Co, solicitors laid the facts before the council He said that Dr Litvak had practised in Tel Aviv as a specialist in nerve complaints, and had been consulted by a Mrs Goldberg about the girl Hava Rubin, whose parents had recently died and left her about £1200 He had taken the girl as a patient into a place he had called his clinic on the ground floor of a building of which the middle floor contained living rooms and the top floor a pension kept by his wife She lived in the pension, and Mrs Goldberg paid £1 a day on her behalf which had been reduced to £18 a month. Mrs Goldberg had been prevented from seeing the girl, who had been taken to an orange grove at Raanana, about an hour away, and locked up in a shed with an iron roof and a concrete floor containing a filthy iron bed and no sanitary or washing facilities The only person in charge of her had been an old man of eighty, Dr Litvak's wife's father, but on one occasion Dr Litvak had taken food to her himself Evidence had been given in Palestine that a man had paid £300 to Miss Rubin in August, 1933, and that she had immediately handed the money over to the respondent, who had been present at the time

Dr Litvak, in evidence, said he had practised as a specialist in mental diseases in Palestine since 1920 He had been consulted in the case of Hava Rubin, who had been suffering either from dementia præcox or from functional disorder He had decided to remove her from her relatives and keep her under observation After a time she had recovered sufficiently to live in his wife's boarding house, and he did not then treat her any more He had nothing to do with the boarding house, and knew nothing about the financial arrangements made between Mrs Goldberg and his wife The girl had refused to go back to her relatives Proceedings taken by Mrs Goldberg to have the girl declared insane had failed In 1935 his wife had sold the boarding house, and he and his wife had purchased an orange grove with a house at Raanana, about an hour from Tel Aviv He had been very busy with his practice and had only paid occasional visits to look at the orange grove, staying perhaps a quarter of an hour He had seen the girl in the garden on two or three of those occasions, and she had passed the time of day with him She had never complained of not being well He had never seen her in the chicken house Until the police investigation, he had never known that she had been shut up in the chicken house The superintendent of the Bethlehem Mental Hospital had found her insane, and she had been so pronounced by the court a year before the prosecution

Cross examined, Dr Litvak agreed that originally he had arranged terms with Mrs Goldberg—£1 per day—for Miss Rubin Later, when she had recovered, this had been reduced the arrangement being made between Miss Rubin and Mrs Litvak, he did not know that she paid £18 a month until early in 1935 He had not been present, or in Tel Aviv at all when £300 had been handed to Miss Rubin There was a credit entry of £300 in his bank account for 1933, but that sum did not come from Miss Rubin but from a sale in Tel Aviv He had never seen the chicken coop before the proceedings began in January, 1937. He had bought the grove in March 1935, and visited it many times, it was 45 square kilometres in extent The chicken coop was 70–75 metres from the house He had known it was there but had never been inside it Neither he nor his wife had looked after the grove they left it to a manager, who had subsequently proved untrustworthy His wife had looked after the house but had not concerned herself with the orangery Until 1929 he had a licensed clinic but after that he had no right to keep patients

In reply to the Legal Assessor he agreed that when Miss Rubin first came to the pension she was a patient under observation She had ceased to be a patient after two or three months having become quite well She had then become an ordinary inmate of the pension She was a friend at first she had paid, but afterwards not regularly She had been pronounced insane sometime in 1936, but only when the police came

In reply to members of the council the respondent said that he had seen no signs of insanity in Miss Rubin all the time she was at the orangery It was true that his son had given evidence of seeing her tear her clothes and go about partially naked, but the boy had never told him this. His father-in-law had never told him that he had shut Miss Rubin up in the coop for short periods because she was going about undressed

Mr. Lawson said that the court in Palestine had been concerned to administer a somewhat difficult clause in the old Turkish law, and this had in fact been the first case under this clause That court had been influenced by a number of matters not affecting the General Medical Council.

After deliberation in camera, the President announced that the registrar had been directed to erase from the register the name of Abramo Litvak.

AN ADJOURNED HEARING

John Herbert Hannan, registered as of 62, Queen Anne Street, W 1, L M S S A Lond, 1921, M B, B.Chir. 1926, M D. 1927, U. Camb, appeared before the council, accompanied by Mr R G. W. Ross, of Messrs Kingsley Wood, Williams and Co, solicitors for the hearing of his case adjourned from May, 1938 The council had found proved against him charges of being associated with the proprietors of a commercial rheumatism clinic which advertised and canvassed for patients Dr Hannan produced evidence that he had at once severed all connexion with the clinic and taken up research work under ethical conditions The council decided not to direct the erasure of his name

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THE HASTINGS CONGRESS

THE congress of the Royal Institute of Public Health and Hygiene was held at Hastings from May 23–27 under the presidency of Mr **WALTER ELLIOT**, whose inaugural address was briefly reported in our last issue The work of the congress was divided into five sections, dealing with state medicine; women and children, tuberculosis, rheumatism; and nutrition and physical training

Nursing Services

In his presidential address to the section of state medicine Sir **FRANCIS FREMANTLE** surveyed the service aspect of nursing. He briefly reviewed the evolution of nursing from a religious sisterhood to a lay profession, with its great spurt under the inspiration of Florence Nightingale, to its culmination in the act of 1919. The number of nurses of all kinds now on the register is, he said, about 90,000, but there is an increasing and almost universal shortage This is not due to a falling-off in entries, for twice as many nurses were admitted to the register in 1937 as in 1926, nor to a greater rate of wastage, but to increased demand. The main factors responsible are the recent increase of 1500 beds every year in voluntary hospitals alone; the transference of hospitals from the guardians to the county and borough councils, the increased demand for the hospital treatment of acute illness, for domiciliary nursing, both municipal and private, and for the nursing supervision of the complex modern methods of treatment; the reduction in nursing hours; and the needs of public-health nursing and health visiting Thus, whereas to maintain the 9000 now sitting for the final examination every year requires 12,000 entrants for training, if these additional needs are to be met 8000 more entrants will be required. Little is to be gained by lowering the age for entering the wards Only a fraction of those needed can be obtained from the 46,000 a year output of the secondary schools; and if more of the 280,000 girls leaving elementary schools each year are to be diverted from other ways of earning their living, conditions must be improved and the attractions of nursing brought home to them by well-directed publicity Even so, Sir Francis thought there was little likelihood of the demand being met by the requisite increase in state registered nurses; nor is this necessary The fully trained nurse is too precious to be wasted on duties which can be done by competent unqualified women. Many sensible women of middle age could, with a modified course of training, perform useful service, for example, in chronic wards, mental hospitals, or in simple private cases The Minister of Health has called for 100,000 additional "nurses" for the 250,000 additional beds, but there is a danger that the public might be unable to distinguish such semi-trained women from qualified nurses The Athlone committee have therefore suggested a separate roll of assistant nurses under the General Nursing Council Such additions and the necessary improvements in conditions will involve the training schools and the voluntary and municipal hospitals in expenditure that they could not meet, and Government grants, with their consequent share of public control, are essential.

Sir Francis urged an even more radical review of the proper functions and use of nursing [illegible] Sick-nursing and district-nursing have become two separate and independent callings, but they deal with the one patient, who comes out of the district, passes through the hospital and returns to the district again. He could not believe this dichotomy of the nursing profession to be justified either in theory or in practice, in the interest either of the patients or the nurses In one suburban hospital, visited on behalf of the King Edward VII Hospital Fund he found what seemed the ideal solution The district nursing was amalgamated with the hospital work and carried out by the same nursing staff under the medical staff of the hospital Nurses would undertake a term of duty for so many months in the district and in the outpatient department, and then return to duty for so many months in the wards. Patients were thus caught in early stages of illness, generally treated by their own doctors, and only advised to come to hospital when necessary Once in hospital they could be discharged all the earlier with continuity of treatment and satisfactory liaison with the general practitioners. The nurses profited in health and in the change of routine But principally it gave them a wider sense of the origin and end of health; its prevention, its continuance or recurrence and its cure And the voluntary system was saved the tiresome and exhausting duplication and overlapping of appeals, flag-days, whist-drives, bazaars, organisation and waste by having one system of voluntary work in the area

Otorrhœa in Children

Dr. **PHYLLIS TOOKEY KERRIDGE**, London, in opening the discussion said that there are about a third of a million school-children in England with defective hearing. Fortunately, 95 per cent. of these are so slightly affected that they suffer no educational handicap, but nearly 98 per cent. require medical attention over a long period The problem of finding the 80 deaf children in every thousand has been simplified, at least in those over seven years of age by the development of the gramophone audiometer. A suitably instructed nurse or welfare worker can deal with 30 to 40 children at each test in about twenty minutes. Children under seven who cannot write can be examined by a modification of the gramophone audiometer test, but only 6 to 8 children can be dealt with at a time and the results are not very satisfactory. Testing each infant separately is the best method, but this occupies about fifteen minutes for each child. When the children with impaired hearing have been discovered, they should be medically examined by an aural specialist. A committee of the Board of Education have recommended that a scheme for the treatment of ear disease and deafness should be established as a branch of the school medical service.

Dr Kerridge pointed out that chronic suppurative ear disease is commoner among the poorer classes. She tested the hearing of over 5000 school children in different parts of the country and of different social circumstances and found that defective hearing was four times as common among public elementary-school children as among children at schools where fees were paid. Almost all the cases were due to middle-ear disease, and there was not a single case of *chronic otorrhœa in the better class group.* Climate had little effect and there was no difference in the incidence at boarding or day schools of the same group. She thought that malnutrition was the important factor, deficiency of vitamins A and C *and protein being perhaps most responsible,* and that the incidence would diminish with improvement in social conditions.

About one child in every thousand is so severely deaf from infancy that it cannot hear speech. It is therefore dumb until trained by *a teacher in a special* school. Congenital ear defects are responsible for half of this group, but meningitis and early acute middle-ear disease account for a large number. Nowadays, congenital syphilis is the cause in only 5 per cent. of these cases. *Early specialised education* is the only hope for all these children. Dumbness is almost invariably due to deafness, and dumb children should be managed and educated on this assumption until another cause is proved. It has been found that only 3 per cent. *of these children are completely* deaf to magnified sounds. Moderately deaf children present a vast educational problem, for some need instruction in lip reading, others require hearing aids and yet others merely require a favourable seating position *in the class room. No special schools exist* for them and the official ruling is that they should be sent to the existing schools for the severely deaf, preferably as day scholars and placed with those children whose speech does not require to be developed.

Mr MAXWELL ELLIS (*London*) said that prevention of otorrhœa is the first and best step in its treatment. Dr Kerridge had demonstrated the close connexion between malnutrition and otorrhœa. Minor degrees of amelioration of the former came within the province of *the medical officer of health.* In defining chronic otorrhœa as a purulent discharge lasting longer than three weeks he knew that he might incur criticism, but an arbitrary limit was necessary as the two types of case differed so widely in prognosis. Certain factors were responsible for the chronicity of the condition :—

Nasopharyngeal sepsis in cases where there is a subtotal perforation of the drum.
Granulation tissue in the tympanum.
Granulation tissue in the attic region with perforations either in Shrapnell's membrane or the posterior marginal area of the pars tensa.
Infection in the mastoid antrum and cells.

Bone involvement may arise in all the last three conditions.

Tubal catarrh is an important factor in both acute and chronic cases, and may result from any or all of the following :—

Cold and damp.
Faulty metabolism, especially too great a proportion of fats and carbohydrates in the diet.
Local irritation by tobacco, alcohol or dust.
Neighbouring foci of infection, chiefly in the lymphoid tissue in the nasopharynx and the nasal accessory sinuses.
Lastly, a poor resistance of the patient to infection.

Attention to diet and hygiene covers most of these points, but local *measures are necessary to ensure* adequate tubal drainage. In the earlier stages of infection, when mucous membrane swelling is a feature, astringent steam inhalations are useful. In the later stages, obstruction is more often due to external *agencies, notably adenoid tissue.* Infected lymphoid tissue is best removed surgically during a quiescent interval, and infected sinuses must be drained, either medically or surgically.

Applying these principles, the local treatment of *acute otorrhœa is divisible into treatment of tubal* catarrh and treatment of the actual discharge. In dealing with the latter frequent irrigation of the ear with a non-irritant solution of boric acid, using a rubber syringe, is the best routine treatment. The services of a trained nurse are unnecessary, as the average mother can usually be shown how to perform the manœuvre. Early in the disease, when congestion is present, syringing is followed, after drying out the ear, by a few drops of glycerin, to which carbolic acid can be added to a strength of 2½ per cent. if there is pain. Later, drops of rectified spirit (25 per cent.) can be substituted to assist in drying. Sulphanilamide should be exhibited in full doses and the usual general treatment of an acute infection administered.

In dealing with chronic otorrhœa the first step is the eradication of neighbouring foci of sepsis and the treatment of tubal catarrh. These measures will often cause a great diminution in the amount of the discharge, but in some cases with a moderate sized perforation some residual mucus is constantly found. This is often due to the exposed tympanic mucous membrane, and closure of the drum cures the condition. Light cauterisation of the margins of the perforation may effect this closure. Another cause of *the continuation of discharge is the presence of* polypi or granulations in the tympanum. These can be removed with forceps or destroyed with trichloracetic acid or chromic acid. Where the mucous membrane has been largely replaced by unhealthy *moist granulations a cure can sometimes be effected* after a few weeks of irrigations by the local application of a powder consisting of iodine (1 per cent.) in boric acid. The powder is insufflated after a preliminary cleansing followed by drying with absolute alcohol, and this *is repeated every other day.* Zinc ionisation can also be used *for these cases.*

A group of cases remains where a purulent discharge persists in spite of these measures. The underlying cause must be bone infection or necrosis, attic disease or invasion by cholesteatoma. Careful radiological study may assist in the diagnosis. The treatment must be operative.

ADMINISTRATIVE MEASURES

Dr A. G. WELLS (London) described the development of the London County Council aural clinics. They started with the foundation *of the St. George's* Dispensary, Blackfriars, by a philanthropist, Dr Kirby. The dispensary included an aural clinic at facilities for the performance of tonsil and adenoid operations Dr. Wells was appointed aural surgeon to this dispensary, and was able to interest the Board of Education in the work The L.C.C later agreed to pay the dispensary a capitation fee for its school-children operated on there. By degrees a network of similar clinics grew up all over London, run by local committees with whom the L.C.C made arrangements. This scheme is still in existence with the additional refinement of several days' postoperative inpatient sojourn

In 1915 the L.C.C. agreed to establish a "special ear clinic" as an experiment, in the south-west division. This was so successful that one was started in each of the other four divisions within two years, but they were only able to carry out simple conservative measures In 1917, with the support of the late Mr. Charles Heath, Dr Wells was given permission to admit some of these children to the Metropolitan Asylums Board infirmary in Cleveland Street for surgical treatment. In 1921 the Cleveland Street infirmary was transferred to the Downs Hospital, Sutton, and a school established in the hospital to provide educational facilities during convalescence. The final link in the chain was forged in 1924, when the M.A.B fitted up a clinic where postoperative treatment could be given to children discharged from the Downs Hospital

Meanwhile, more treatment centres had been established—there are now 16—and more complicated methods of treatment introduced, such as zinc ionisation and diastolisation Children at schools for the deaf were brought into the scheme in 1924 In 1934 testing with the gramophone audiometer was introduced. The nurse in charge of the instrument tests a group of children, and the failures are examined by an aurist who advises suitable treatment With the parents' permission and coöperation this is then carried out at the nearest centre A final hearing test is made at the conclusion of treatment There are eight schools for deaf and partially deaf children, in addition to a boarding-school at Penn in Buckinghamshire for children with additional defects Every child in these schools is examined once in nine months Group hearing-aids are installed in all the schools.

DISCUSSION

Dr. A F. **Adamson**, Hendon, asked whether the deaf children picked out by Dr. Kerridge became more deaf with the passage of years There had recently been a great increase in the number of mastoid operations in the isolation hospital in his borough, and the proportion of dry ears on discharge from hospital was higher than formerly; he wondered whether conservative measures could have achieved the same end

Dr W M. **Feldman**, London, was sceptical of the relationship between vitamin-lack and otorrhœa He also asked whether there is any definite evidence showing that sulphanilamide is beneficial in these cases He had noticed that a tonsil and adenoid operation was often unsuccessful in clearing up or preventing otorrhœa, and mastoid operations were often equally disappointing Some advocates of the zinc ionisation treatment said that a cure could be guaranteed; this had not been his experience

Dr. V. F. **Soothill**, Norwich, was not convinced of the average mother's ability to irrigate an ear efficiently He wondered whether any consideration had been given to the possibility of postural treatment

In reply, Dr. **Kerridge** said that there were no statistics to illustrate the natural history of the deafness in these children She too was not convinced of the specific rôle of the vitamins, but malnutri is an undoubted factor in the production a perpetuation of otorrhœa.

Mr. **Maxwell Ellis** said that the experien Hendon was exceptional, as the frequency of mas operations had been lessening in recent years a the introduction of sulphanilamide had acceler this process Conservative measures might h achieved the same results. No statistical evide of the effect of sulphanilamide therapy was y available, but nearly all aural surgeons were convi that it diminished the intensity of the disease a reduced the tendency to complications A to and adenoid operation performed as a result definite indications was as successful as any ot surgical procedure carried out for an adequate rea His experience had been that the average mo could be successfully shown how to syringe a chi ear Beyond advising lying on the diseased side facilitate a free discharge from the meatus he did know of any special postural treatment

Dr **Wells** said he was sure most deaf chil become progressively deafer He too was surpr that mastoid operations had increased in numbe Dr Adamson's isolation hospital, as this was con to his own experience. One factor in the lack success of some mastoid operations was ineffi postoperative care Zinc ionisation is emine suitable for cases where disease is confined to tympanum, but it naturally failed in other cases

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH MEDICAL UNION

The annual meeting of the Irish Medical Un to be held next week in Dublin, will have the sp character of a centenary celebration The u came into existence, it is true, as recently as Ja 1936, when it was formed by the amalgamatio the Irish Medical Association and the branche the British Medical Association in the area of Irish Free State The Irish Medical Association been established at a large meeting of medical held in Dublin on May 29, 1839, but the Br Medical Association, although founded (under an name) in 1832, had no connexion with Ireland nearly thirty years later. Richard Carmichae distinguished Dublin surgeon and syphilologist, sided at the inaugural meeting of the Irish Me Association in 1839 and was president of the as tion until ten years later, when he lost his li drowning while riding homewards across the san Clontarf. With Carmichael was closely associ Arthur Jacob, a physiologist and eye surgeon many original investigations to his credit, wh preparation for the reforms which, it was ho would follow the founding of the association ha months earlier founded the *Dublin Medical P* which under its present title of *Medical Press Circular* still flourishes, though now published in Lo Carmichael and Jacob had far-reaching schem reform of the medical profession, which were n realised, but the association which they fou still exists, and an offshoot therefrom is the M Medical Benevolent Fund Society of Ireland, w still carries on its work Throughout the ninety years of its life the Irish Medical Association chiefly concerned with the protection of the int of the members of the Irish poor-law medical s and was their champion throughout the many years of struggle and hardship to which that service was subjected The present body inherits that duty and finds that there is still much room for its activity

The usual programme of the annual meeting of the union has been extended considerably for the coming meeting For some years past there have been held a scientific session and the usual business meeting, followed by a dinner This year there will also be a commemoration session, at which Dr Robert J Rowlette, a former president of the Irish Medical Association, will deliver an address entitled One Hundred Years of Medical Organisation in Ireland, and this address will be followed by speeches from, among others, Prof T G Moorhead, a former president of the British Medical Association, and Dr T P C Kirkpatrick, a recognised authority on the history of Irish medicine The subject of the scientific session will be modern developments of chemotherapy, to be introduced by Prof H F Moore, of Dublin, who will be followed by Prof J M O'Donovan, of Cork, Prof W M Fallon, of Galway, and Prof Moorhead New features of the meeting will be a trades exhibition and a golf competition

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

APPENDICITIS

YOUR leading article of April 29 summarises a statistical study published by the Medical Research Council, from which it is concluded that the mortality-rate for appendicitis in Great Britain is unchanging In this country the situation appears to be more hopeful A table published by the Metropolitan Life Insurance Company last December showed that comparing 1935–36 with 1930–31 the average mortality-rate from appendicitis had decreased in every state in the Union except Arizona The decrease ranges from —2 7 per cent in New Mexico to —32 8 per cent in South Dakota, and in most states it is —10 per cent or more On the other hand there is plenty of room for improvement Among international rates Canada alone has a higher death rate from this cause than the United States, where there were over 16,000 deaths attributable to appendicitis in 1936 It is noteworthy that the rates in the Rocky Mountain states are exceedingly high, being almost double those on the Atlantic seaboard This phenomenon has been attributed to the lack of convenient hospital facilities

The Metropolitan Life Insurance Company's figures are taken only to 1936 but the following rates from New York state during the last six years indicate that the progress may have been continuous up to the present time

UPSTATE NEW YORK

Year	Deaths	Rate*	Year	Deaths	Rate*
1933	930	15·9	1936	810	14·0
1934	874	14·9	1937	763	12·7
1935	829	14·0	1938	661	10·9

* Per 100 000 population

AMERICAN MEDICAL ASSOCIATION CONDEMNS WAGNER HEALTH BILL

On May 17 the house of delegates of the American Medical Association adopted a report of its reference committee on the Wagner Health Bill by unanimous vote The report places the association "unmistakably and emphatically" in opposition to the Wagner National Health Bill now before the Senate It finds that the bill does not safeguard the continued existence of the private practitioner, that it proposes to make medical aid the rule rather than the exception, that it "insidiously promotes the development of a complete system of tax supported governmental medical care" These and other objections are accompanied by the statement that "no other profession and no other group have done more for the improvement of public health, the prevention of disease, and the care of the sick than have the medical profession and the American Medical Association"

The house of delegates is in favour of the expansion of preventive medical services and the extension of medical care for the indigent and for the medically indigent, provided that needs shall be locally determined and administration shall be under local control Any state that is in actual need of federal subsidy for this purpose should be able to obtain such aid "in a medical emergency," without stimulating every other state to seek and accept similar aid

MICE AND CHORIOMENINGITIS

The virus of lymphocytic choriomeningitis was first isolated at the National Institute of Health in 1934, and has since been recovered in England, France and Japan Dr Charles Armstrong now reports the discovery of a natural reservoir in *Mus musculus*, the common grey house mouse The virus has been isolated in 3 out of 5 mice trapped in two homes in Washington, D C, where proved cases of choriomeningitis appeared As a control to this observation 21 mice were trapped in eight homes and buildings wherein human cases had not occurred Dr Armstrong was unable to recover the virus from any of these 21 mice.

MOTILE SPERMATOZOA PROVED STERILE

A unique experiment with human spermatozoa is reported by Frances I Seymour in the *Journal of the American Medical Association* for May 6

Mr and Mrs K had been sterile during eleven years of married life Mr K's seminal fluid contained 94 million highly motile spermatozoa per cubic centimetre with a motility index of 18 hours There was no discoverable defect in the reproductive system of his wife Dietetic treatment, supported by ultraviolet irradiation, was ineffective A three month summer holiday in England resulted only in an increase in the motility index to 21 hours. An attempt was then made to fertilise sixteen volunteer women by artificial insemination with the K spermatozoa on the 6th, 10th, 12th and 14th days of the intermenstrual period This attempt persisted from October, 1936, to March 1937 No pregnancy resulted The experiment was then controlled by artificial insemination of the same sixteen volunteers as well as Mrs K, with the semen of a second donor known to be fertile. All seventeen women became pregnant, in the course of 14 months Fourteen conceived through insemination on the 6th, 10th, 12th and 14th days of the intermenstrual period In the remaining three cases it proved necessary to inseminate on the 2nd, 4th and 5th days Seymour concludes that the fertility index of spermatozoa may not be judged by conformity of the count per cubic centimetre, by ascertainable motility or by any of the other physical factors diagnosable by ordinary microscopic examinations

In an editorial the journal comments on the uncertain legal status of children born as a result of artificial insemination and recommends that they should be legally adopted to ensure their inheritance

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM PETER QUINCE

I

THE funniest teacher I ever had once exclaimed at a bedside to a distinguished colleague: “This patient is a test-tube Pour alkalis into him making his blood pH more than x, and his kidneys secrete thus; make it less than x, and his kidneys do the other thing”—or words to that effect. The other day, some fifteen years later, I again accompanied him on a ward round Pausing at the foot of a bed occupied by a woman suffering from trigeminal herpes, he said: “This patient has intractable neuralgia Her mother died recently and she has lost her job Her relatives do not want to be burdened with her. She has nothing to live for and nowhere to go.... This pain is her Escape from Life.... It is her Little Friend” (Yes, that was his exact phrase!) “Is it wise even to attempt to part them?” All bystanders were visibly impressed and a foreign gentleman even went so far as to make a note And we passed on to the next bed.

Which only shows how the psychological approach to disease is gaining ground, and how some old dogs can still learn new tricks

* * *

In my hospital days, patients suffering from chronic functional disorders were regarded as nuisances and labelled “snags.” You were snagged by them if they joined your outpatients', and you did your utmost to snag them on to another department To admit a snag into your own ward was a terrible solecism frowned upon by your chief, your ward sister and your very clerks: to foist a snag into somebody else's beds was game and rubber In outpatients, snags were treated kindly with a fortnight's or a month's supply of bromide and valerian or bromide and gentian, according to their sex If they were more importunate they were snagged on to the electrical department, in the faint hope that mild electrocution, or whatever they got up to in that unexplored territory, would end their ailments They rarely returned to medical outpatients', so it worked very well. Of course, if in addition the patient were definitely batty he was referred to psychological outpatients', and that was the end of him as far as the house-physician was concerned Aid from the psychological department was invoked, too, if a patient became violently insane in the wards; but not if he were just quietly wretched with neurasthenia. Of applied psychology there was none the useful function of the psychologist was to decide whether a snag were certifiable and if so to dispose of him

I expect all that has been altered now, with the more modern concept that chronic functional disorders respond to a rather different method of approach, and perhaps general practitioners are now being fledged with some inkling as to how to deal with them For the G P soon learns that the chronics form a not inconsiderable proportion of his practice The most careful physical examination reveals no abnormalities —and yet they are ill or they wouldn't come to the doctor.

In general practice, having decided that an illness is functional and psychopathological in origin, we are faced with the problem—what is to be done about it? It is profoundly difficult to bring home to a patient your conviction that he has within him a “black spot, not so big as a pin's head, but waiting to spread and destroy him in the fullness of time” —when the black spot is neither cancer nor tubercle but—Fear Unless seriously distressed, patients in private practice are apt to take umbrage at the mere suggestion that they should undergo any systematic psychological treatment It is an aspersion on their sanity The only people who get sent to psychologists (they are convinced) are Frustrated Spinsters and Choirmasters Who Have Been Caught Out in neither of which category do they themselves fall. For when a Bishop, say, is laid up with a cold, or falls into the hands of a prostate fancier, discreet bulletins are issued by the press: but the public is not informed while he is fidgeting on an analyst's couch To many the anticipated cost of treatment, too, is prohibitive both in time and money it will cost about as much as a major surgical operation and will take far longer Moreover, the patient will very soon discover that it is the reverse of anaesthesia. This business of probing under guidance all your sore points, reducing the dislocation of your own sense of humour and purging yourself of what is better down the drain can be most disagreeable; and to have to pay three guineas an hour while you do it seems an added insult

If, in addition, you have somehow gained the impression—as I certainly have—that during the process *not only* does the analyst help the patient to analyse himself, but the patient helps the analyst to depths of self-analysis which he could never plumb alone—it seems less fair than ever Surely for every really dirty crack you get back at your analyst, ought he not to hand you back at least half a guinea?

Small wonder that many *fail* to finish the course and rise indignantly from the table, as it were, with their guts hanging out of the wound, and find themselves in a worse mess than they were when they started (Which perhaps partly explains the disrepute into which psychotherapy can sometimes fall.)

* * *

Supposing to crown all this the nearest psychologist is 120 miles away and the patient earns but [illegible] pounds per week? Either the patient goes untreated or else is subjected to our own amateur efforts. I suppose we all enjoy (and perhaps some of us never emerge from) that recurrent phase of imagining ourselves born psychologists, confident in our armamentarium of common sense, worldly wisdom, experience, encouragement and brilliant guesswork, disparaging the professionals with their difficult patois and their unwholesome insistence on [illegible] pathology. (As well might we eschew the post-mortem room!) But proud as we are of our psychological diagnoses, when it comes to treatment we come a cropper

A nice little problem was set me by a panel patient—a labourer—with “true neurasthenia.” (This diagnosis, I hasten to add, was confirmed by a consultant to whom I immediately sent him) After having supplied weekly certificates to that effect for some time I discovered a possible reason for his condition he had been leading a double life quite successfully until recently when he had been found out by his wife—a vitriolic termagant—who in her turn, he alleged, was more than partial to the lodger His home life had lost its last semblance of peacefulness, and the conflict between his desire to appear respectable and protect his legitimate children, and his desire to seek happiness with his leman was too much for him hence his nervous breakdown I did not know how to treat this disease, nor what advice to give A colleague's dictum that the man wanted a kick up the pants did nothing to clarify the situation So I just uttered weekly certificates with a guilty feeling that I was conniving at a misdemeanour—for was I not signing to the effect that the illness was not due to any negligence or other contributory act on the part of the patient? But after all I couldn't very well cut off supplies just because I had at least got the patient's confidence, could I? My uneasiness reached its peak when his club grew inquisitive and the regional medical officer sent me one of his beastly forms to fill in How much should I divulge? My duty to the patient I felt should come first and I could visualise an unsympathetic regional officer (who wouldn't know the wife or the mistress—both patients of mine) dislodging him from club benefit and writing a snorter to the club about him—and about ME! How much might I get fined? I might (you know how the imagination races at 3 A M) be hauled up before the Ministry of Health or the G M C and feature in all the Sunday papers Happily it didn't come to that The prospect of facing the R M O put an end to the patient's indecision With a morning face he signed off the club and disappeared with his inamorata I have heard long since that he has settled down happily in his new home, is working well and, under the pressure of separation orders, that he is still supporting both establishments An immoral little story and one likely to shock some of the younger readers, I fear Moreover, it cannot possibly end satisfactorily, for it is doubtful if any divorce judge would exercise the discretion necessary for either party's plea

* * *

And then one is confronted with a patient with an organic disease—how can one assess the relevance of any psychological symptoms that may be discovered in his case? The most confusing anomaly encountered in the psychological approach to organic disease is that one finds that quite healthy and cheerful people on investigation seem to have enough conflicts, phobias, repressions, frustrations, intolerable environments and whatnots to produce about half a dozen psychoneurotics but, apart from being a little odder perhaps than you or me, they do nothing noteworthy about it

In general practice I once had a patient from whom after months of ineffectual treatment for his gastric symptoms, I elicited that his great frustration in life was that he enjoyed spanking his wife and was strangely attracted by the idea, whereas she didn't like it, and kicked up a fuss I see my mistake now but at the time in desperation I assigned to it Great Significance My interview with the wife, suggesting that if she indulged this very mild flagellant propensity of his she might develop a healthier and happier husband, merely lost me two patients and still makes my ears redden when I think about it

Dear reader, you needn't laugh I bet you have made howlers just as blood curdling What about that time when you were surly with a patient for getting you out of bed and told him that he wasn't as ill as all that, and he told you he was, and proved it by dying before the morning, eh?

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 20, 1939

Notifications—The following cases of infectious disease were notified during the week Smallpox, 0; scarlet fever, 1781, diphtheria, 700, enteric fever, 20 (24 "expected"), pneumonia (primary or influenzal), 850, puerperal pyrexia, 182, cerebrospinal fever, 30, acute poliomyelitis, 4, encephalitis lethargica, 7, dysentery, 39, ophthalmia neonatorum, 114 No case of cholera plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 26 was 3122 which included Scarlet fever 710, diphtheria 582 (carriers 22), measles 4 whooping-cough 1019 puerperal fever, 21 mothers (plus 12 babies) encephalitis lethargica 303 poliomyelitis 4 At St Margaret's Hospital there were 23 babies (plus 12 mothers) with ophthalmia neonatorum

Deaths—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric fever, 2 (0) from measles, 3 (0) from scarlet fever,[1] 22 (2) from whooping-cough, 25 (5) from diphtheria, 31 (7) from diarrhœa and enteritis under two years, and 31 (5) from influenza The figures in parentheses are those for London itself

Birmingham reported 3 deaths from whooping-cough, Portsmouth 2 Fatal cases of diphtheria were scattered over 15 great towns, Birmingham reporting 3, Manchester, Sunderland, Smethwick and Norwich each 2

The number of stillbirths notified during the week was 255 (corresponding to a rate of 39 per 1000 total births), including 44 in London

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[1] Last week the notifications for scarlet fever numbered 2001 (not 1001)

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY—Sir Cuthbert Wallace, president, took the chair at the annual general meeting of the society held at Victory House, Leicester Square, on May 17 He began by recording the death of Dr Hugh Woods a former secretary of the society for forty years, and of Mr Sydney Spokes and Dr Margaret Kettle, members of the council The year he said, had been a record in applications for advice and assistance, a total of 1800 Membership had increased substantially and appreciation of the services rendered was shown in the remark "I cannot make out how the society gives us all that it does for a subscription of a pound a year" made to him by a member of a hospital staff in the Midlands He emphasised the value to the practitioner in trouble of having a good record of his case Mr W M Mollison, treasurer, said the society's position was sound with excellent reserves Last year it had kept within its income The cost per member which had been £1 5s 7d in 1936 and £1 4s 1½d in 1937 was only 18s 0½d in 1938 Mr G F Stebbins, chairman of council proposed and Dr C O Hawthorne seconded Sir Cuthbert's re-election as president Four retiring members of council were re-elected Dr Thomas Beaton Mr Mollison Dr G M Stoker, Dr Raymond Stowers Mr Mollison was re-elected treasurer and Dr R W Durand secretary In proposing re-election of the solicitors, Mr Harry Stokes spoke of the invaluable work of Messrs Le Brasseur and Oakley and mentioned the name of Mr Russell litigation clerk, upon whose shoulders fell much of the detailed work Dr Durand, replying for the staff said that the answer to the simplest question frequently entailed quite a lot of labour, and he testified with pleasure to the spirit of team-work in the office The meeting terminated with a vote of thanks to the president

LETTERS TO THE EDITOR

THE PSYCHOLOGIST IN WAR-TIME

SIR,—In connexion with Sir Arthur Hurst's letter in your last issue, I should like to emphasise the importance of early psychological treatment for cases of functional nerve illness in war-time. This was one of the outstanding lessons of the Great War. It had become apparent to me during months of work with cases of war-neurosis in Maghull Military Hospital under Major R. G. Rows in 1915, and in the spring and summer of 1916 when I was working as the first resident medical officer of the newly established Maudsley Hospital under Major (later Sir Frederick) Mott But I was able to put it to the test in the autumn of 1916, when I was stationed at No. 21 Casualty Clearing Station at Corbie, on the Somme, under Lieut -Colonel H. E. M. Douglas, V.C., through the good offices of Lieut -Colonel C S. Myers, and given charge of the treatment of all the nerve cases of the Fourth Army of the British Expeditionary Force. I then found that an average of two weeks' general and psychological treatment of these cases enabled me to return 70 per cent of them to duty in the line The remaining 30 per cent. went down to base hospitals in France and England for further treatment. Much of this early treatment "in the field" could be regarded as being prophylactic in nature, raising morale and cutting short the further possible development of functional symptoms Of the cases, 15 per cent. were definitely hysterical in type, with functional amnesia and other manifestations of crude functional dissociation. With every 1000 cases of psychoneurosis and organic nerve trouble (not surgical) which I saw under these conditions in the field there also passed through my hands about 125 cases of psychosis (schizophrenia, melancholia, manic-depressive psychosis, paranoia, &c). I feel little doubt that these various percentages will hold good, within narrow limits, in any future war of a similar nature, since they are based on a study of several thousands of cases.

My work at Craiglockhart War Hospital, Edinburgh, in 1918, like that at Maghull in 1915, demonstrated to me the need of prolonged and radical analytical treatment for the more severe cases of psychoneurosis, but, in the light of the above-mentioned statistics, these are a minority of all such cases caused by war service Adequate training of the troops in their military duties and firm but considerate military discipline are important factors in diminishing the incidence of war-neurosis Care for the soldier's general health and comfort, with adequate rest and recreation in the intervals between "pushes," all work in the same direction.

As history has proved throughout the ages, a commander who is a good psychologist, in the practical sense, gets the best out of his troops

I am, Sir, yours faithfully,

Harley Street, W 1, May 29 WILLIAM BROWN.

THE PRESENT POSITION OF DENTISTRY

SIR,—In your leading article last week you remark once more on the fact that the number of annual additions to the Dentists Register is inadequate to supply the dental needs of the people This is a matter which may well become grave and is certainly not without a cause It is not due to public ignorance of the inadequacy, for this has for many years been made known in the press in articles which have gone so far as to represent a dental career as a golden opportunity. The reason lies in the conditions of livelihood and remuneration of the less fortunate and more numerous dental practitioners and is not unconnected with conditions of service under the National Health Insurance Acts The remedy which the Dental Board has attempted the expenditure of £217,000 on bursary grants to students, is no more than a costly palliative

While an improvement in the remuneration of practitioners sufficient to attract an increasing number of students of the best type is highly desirable, the alternative solution—a serious attempt to reduce the necessity for dental treatment—is even more important. Few people can doubt that the means of producing a considerable reduction are already within our knowledge, or that research has now reached a stage where with some substantial encouragement far greater results could be achieved. It is a matter of great regret that the heavy expenditure of the Board upon such temporary expedients as bursaries prevents it from giving greater support to measures of more lasting value. I am, Sir, yours faithfully,

Harley Street, W 1, May 29 MARTIN RUSHTON

FIRST-AID POSTS

SIR,—The question of first-aid parties and first-aid posts is looming large in the minds of civilian medical practitioners who would have to staff them in time of war; and there is still apparently some uncertainty about their functions

In this borough of Barnes we have been actually engaged in A.R.P. work since October, 1936, when I conducted my first course of anti-gas lectures, and we have naturally accumulated a certain amount of experience Our arrangements are based on the supposition that the first casualty services to come into contact with the air-raid victims will be the air-raid wardens. The warden corresponds to the semi-trained regimental stretcher-bearer of the army organisation, and he gives simple first-aid in the first instance Our air-raid wardens in this borough have all had elementary courses of instruction in anti-gas, in first-aid, and in message-writing. On finding casualties it is the warden's duty to notify the control centre of the borough by telephone or messenger The air-raid precaution officer of the area, at the control centre, transmits location of the casualties to the medical officer of health by telephone or messenger, the M O H notifies the medical officer in charge of the first-aid post, and he in his turn sends out his first-aid personnel It has been suggested that there should also be a mobile unit, corresponding to the surgical teams in the war, which would attend casualties on the spot; but personally I think the mobile unit would be better occupied in helping a hard-pressed first-aid post, or even a casualty clearing hospital, with its casualties Rescue squads are employed to extricate casualties buried in demolished buildings

The casualties, after receiving first-aid attention if necessary, are brought to the first-aid post, either as walking wounded, or lying or sitting cases, in the ambulance car, or even by stretcher-bearer carry The number of personnel employed here may obviously depend on the trained local men and women available The original idea of the Government was to train one person in every fifty of the population in first-aid work

The number of first-aid posts required for each district depends, of course, on the size and population of the administrative A R P area, and they also s so arranged that anyone can walk to one of them ithin ten minutes (This time limit is set by the elayed action of mustard gas) The trained personnel, ale and female, numbering 50–100 or more, are rawn from the British Red Cross Society and St John mbulance Brigade The medical man in charge of e post is a local civilian practitioner, who gives his rvices part time in conjunction with similar practi oners working in relays His position at the post, d in the whole scheme, is of the greatest importance, r he is the first medical man to deal with the sualties, both from point of view of treatment and ot less vital) of classification and disposal It is sential that this medical officer should have received ti gas instruction, for it is here that presumably e majority of gas casualties—i e , the tear gas and eezing gas cases—can be given a little treatment d instructed to go home and report next day to the ctor if not better

It is assumed that the first aid post is sited in a ecial building proof against gas, blast and splinter, d if possible against direct hits with proper sanitary rangements, lighting, and water supply It has been ggested that the posts should be in the outpatient partment of a general hospital, but this is not ways possible, and therefore we have to site our rst-aid posts in some suitable earmarked building he post should have (1) accommodation for edical officer and staff, (2) accommodation for –100 casualties, and some place where casualties n remain under shelter until evacuated, (3) ablution cilities and latrines (4) apparatus for warming e building, for warming blankets, and for warming llapsed patients (5) cooking arrangements,) facilities for adjusting dressings and splints, d (7) reserve supplies of blankets, hot water bottles, homas splints, shell dressings and ordinary dressings me stretcher bearers should be detailed for loading d unloading stretchers, and an exchange dump of retchers and blankets may be formed so that arers can replace those that they have just brought

Provision should be made for necessary clerical sistance so as to record particulars of patients parate accommodation should be available for gas ses, with equipment, including Haldane s oxygen paratus and pyjama suits The post should be in lephonic communication with the A R P officer, e M O H and casualty clearing hospital, and the licer commanding the car park at the clearing spital At the first aid post very urgent surgical sistance can be given, antitetanic *serum* injected d morphia administered

For the proper functioning of the first aid post d the success of the scheme it is essential that the neral public should have been previously instructed, ther by the air raid wardens or local authority, or en by Government broadcast, to report direct to e first aid posts and not to doctors' surgeries or to tpatient departments of hospitals From the aid st some of the walking wounded will be sent home ter suitable treatment The severe cases can taken in motor bus, lorry or charabanc to e casualty clearing hospital The function of the st-aid post is to act as a shield to the sualty clearing hospital in relieving the latter of necessary casualties, and to be efficient it should acuate casualties as speedily as possible, to prevent necessary congestion in the front line" Obviously e of the most important links in the chain of acuation is a speedy mobile ambulance service adesmen's vans can be improvised in an emergency light ambulances and trailer vehicles may be tached to ordinary private motor cars

As many of your readers are aware, the Ministry of Health *through the local medical officers of health*, is instituting the *appointment of* civilian medical practitioners to be in charge *of first* aid posts during peace time, and one of their duties *is to carry out a* monthly inspection of their post and personnel, *for* which services they are being paid a retaining *fee* The secret of success consists in as much preliminary organisation as is possible in peace time, with rapid expansion of all the units in war time and rapid evacuation of the casualties from the front line back to the base hospitals

I am, Sir, yours faithfully,

J B SCOTT

Putney S W 15, May 26 Lieut Col R.A.M C (T A)

AIR-RAID CASUALTIES IN LONDON

SIR,—Your correspondent, "X," writing in your issue of May 6, explained that he concealed his identity because he wanted his views to be considered only on their merits We have hesitated to comment upon them, lest we should, all unaware, be differing from one of the recognised leaders of our profession There are, nevertheless, some few comments which must be offered, particularly as "X" has done us the honour of quoting us

If we take his meaning aright, "X" compares London to a besieged city where movement is of necessity limited, and where no one can tell where the next blow will fall He concludes that evacuation of casualties is not to be advocated and he asks instead for protected casualty hospitals, to complete the treatment of the patient *in London*

No one can deny that evacuation, no matter how carefully and gently carried out, is bound to be in some degree harmful to the patient It is also undeniable that evacuation may be very difficult to arrange "X's" solution of the problem is therefore attractive at first glance Its practicability, however, is open to question We have stated elsewhere our reasons for believing that provision must be made for a minimum number of casualties of the order of 50,000 a day[1] It would be necessary to deal with such numbers of casualties in London *to* prepare *fully* protected hospital space for something like a quarter of a million beds Now, we do not think that this is impossible, the labour and material are available, and could be applied It seems, too, that the expenditure of such an effort might save a number of lives But it would not be economic, more lives could be saved by a much smaller effort directed towards prophylaxis—that is the provision of full protection for the public *before they* become casualties A less important argument against treating casualties in London is that the psychological environment would be far from good We are therefore forced to return to the precepts of orthodox military surgery, and to insist that the prime essentials are efficient first aid careful classification, gentle handling, and rapid evacuation Not one of these ideals will be easy of attainment, it is therefore the more necessary that we should understand the problems involved and prepare our organisation with great care and thoroughness It is also urgently necessary that the importance of our preparations should be realised by the powers that be Unfortunately, there are as yet few signs of any such realisation

It is, alas, doubtful whether any casualty organisa tion could cope for long with the astronomical numbers of casualties which seem to be likely *if the* protection of the population is not taken seriously; but we think that the scheme we described in the article quoted by "X" has at least a chance of success. Briefly it depends upon two considerations; first, the anticipation that casualties will reach a post within half an hour of their occurrence; and second, the observed fact that not more than about 5–8 per cent. of casualties[2] require immediate operation and warding, the remainder being able to stand a journey of some hours. It cannot be sufficiently stressed, however, that evacuation must be preceded by careful classification, and that classification implies plenty of space It should not be (but is) necessary to emphasise the fact that all units in the casualty service must be as fully protected as possible. We therefore described the unit which we called a Classification Evacuation Post; a post as carefully protected as possible, tactically sited, and large enough and sufficiently well prepared to receive *all* casualties in the area served, to classify them, to arrange the evacuation of the majority, and to deal with the small minority of cases of "first urgency" It is not necessary to recapitulate further.

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[1] *Med Off* March 25, 1939, p 117 We are not the only [illegible] that this figure is an underestimate

It will be seen that we heartily agree with "X" in his advocacy of full protection for units of the casualty service inside the danger areas And we must agree with his contention that evacuation will be difficult. Evacuation, nevertheless, is neither impossible nor undesirable. To claim that it is, and to ask that it should be replaced by the construction of fantastically expensive bomb-proof hospitals of enormous size will do no good and may easily cause the whole principle of bomb-proofing to be condemned.

We are, Sir, yours faithfully,

L. CROME,
R. E W. FISHER,
G. B SHIRLAW.

London, N.W.3, May 26.

HEART-FAILURE

SIR,—Dr. Shirley Smith's interesting survey of heart-failure (p. 1168) does not, I know, claim to be exhaustive, but it omits what I believe to be one of the earliest and most valuable symptoms—namely, nycturia Urination at night may be due to various causes, especially in elderly people, and with men it is almost always put down to some degree of prostatic enlargement which may not be clinically demonstrable. As a matter of fact in many such cases it is due to incipient heart-failure, and recognition of this fact may be the means of deferring for a long while the development of more severe and obvious signs of failure As a symptom it is usually present some while before any trace of œdema can be detected in the legs, though some degree of dyspnœa on exertion may coexist.

A moment's thought will show the cause of this symptom As soon as the heart becomes in any way embarrassed the circulation through the body is to some extent interfered with, and this will show itself, inter alia, by a diminished output of rather concentrated urine At night, when the body is resting, the circulation tends to improve, and this results in the excretion of urine in such quantities as to cause the patient to get up to urinate several times in the night and so interfere with sleep This urine tends to be more dilute than the day urine—the reverse of what normally obtains—and is really the excretion of a subclinical œdema of the tissues. This condition is one in which I think the steady administration of small doses of digitalis is of great benefit, and by watching this symptom the patient is able to keep a fairly sensitive check on his pro As he improves nycturia diminishes, and any inc is an absolute indication for less exertion and rest

Dr. Shirley Smith states categorically that "Th are no indications for the subcutaneous or i muscular injection of digitalis" This migh allowed to pass if it read "There *should* be but I can assure him that in poorer-class ge practice many patients derive great benefit from injections where the indications are not urgent e to warrant intravenous injections and where fac for rectal administration are absent.

I am, Sir, yours faithfully,

Winsford, Cheshire, May 25. W. N. Le

PROGRESS AGAINST PNEUMONIA

SIR,—Your leading article of May 13 encour me to air an opinion that must, I think, be sh by others, as to the value of the sulphonamid pneumonia Recently, I have seen three ca delayed resolution after pneumonia treated one of the sulphonamides. It may be that the was not properly used, but another explan suggests itself. It might be expected that an a which tends to depress leucopoiesis, as we know sulphonamides may do, would hamper the good w of the leucocytes as fibrinolytic agents familiar picture of unresolved pneumonia, as reve by the microscope, of alveoli devoid of leucoc but filled with fibrin, is explained as an expo of cause and effect It may be that chemother is mainly effective during the initial phase of p monia but that its continued use may interfere natural processes of repair As you suggest, it reasonable to suppose that chemotherapy and s therapy might, to better advantage, be u combination. For many years I have comb the use of Quinisan with very small, incr doses of Wynn's vaccine as a routine treatme pneumonia The results compare favourably those claimed for M & B 693 I am writing in the hope of eliciting the opinions of others, may have had similar experiences and who h found that, in the treatment of pneumonia, sulphonamides have their limitations

I am, Sir, yours faithfully,

PAUL GI

Torquay, May 26.

A NATIONAL LANGUAGE FOR INDIA

SIR,—On Feb. 18 you commented on an arti mine entitled "Is a national language necessary scientific education and expression in Indi published in the *Journal of South Indian Me* for November, 1938 Your comment, I feel, has m the point of my article and explains only the culties To say that millions of Indians speak Dravidian tongues rather than Hindustani i answer to my estimate of the national craving greater and united India, in which a lingua is absolutely necessary. We do not want to cr Europe in India, a Europe, the home of multitud nations, big, small and insignificant, and a E of as many tongues as there are in India. It is summer madness to think of making Engl national language of India; Slater may have that "the extent to which English has al become the language of South India is ama but the south Indian masses, nearly 95 per ce them, do not know English, in spite of two ce of English contact. Let anyone addres meeting in English, in the city of Madras

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[2] cf A Tudor Hart (*Brit med J* May 27, 1939, p 1099), who gives 2 per cent for this figure

DOCTORS' LIBRARY

the citadel of the English language in India—without many translators, he will find that he is addressing a minority of high school and college students and clerks In the villages, in a population of a thousand or more, one may find one or two knowing some understandable English Hitherto the English officials —I mean the majority of them—have been living an exotic life, and no wonder the results linguistically are almost insignificant But thanks to numerous voluntary organisations, especially the Dakshina Bharath Hindi Prachar Sabha, and the policy of the Congress government at Madras, Hindustani has already made headway and in a decade, if progress is steady, it will have taken permanent root in South India

You say that I seem to be a believer in the Aryan myth Let me state categorically that a modern progressive Indian has absolutely no myth about him Throughout the epochs of Indian history, Indian practice has been toleration and assimilation Compared to the colour prejudice in South and East Africa and Herr Hitler's own untenable theories, India, especially the educated India, has no "myth" complexes India is suffering from too much political and material religiosity The so called official religions are prostituted for material purposes A future India will perhaps be much happier, without the irrational political religions

But I am glad you realise my sincerity when I wrote that "Of all the foreign languages from the scientist's point of view, English is the best" The language of Shakespeare and Shaw can stand on its merits, irrespective of the political needs of India and the world

I am, Sir, yours faithfully,

Coimbatore May, 10 E S Gopalan

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By Medicus, M P

Palestine—civil defence—camps—Finance Bill and Czechoslovakia—these have been the diet of the House of Commons in the week before Whitsun And so crowded is the business pressing for completion that the House had to sit on Friday, May 26, instead of as usual adjourning on the Thursday and is due to reassemble on Monday, June 6, instead of the customary Tuesday

The Palestine debate showed deep divisions in the parties Cabinet ministers abstained on the Government side and privy councillors voted against the Government It is clear the Palestine problem, certain aspects of which, and in particular certain conflicts in respect of which, are written of in the Bible, will not be permanently and peacefully solved in a period of twenty or a dozen years Statesmanship here has to deal with a problem that depends on the biological building up of races and on the laws not of Left and Right in a modern political division of opinion, but of far more fundamental differences which determine the survival or disappearance of peoples

* * *

Civil defence is becoming an ogre in its powers of devouring recruits for its service Vast protection services in the towns and vast evacuation services in the country areas are occupying a great multitude of people The bill clanked its way through a day and a half of the committee stage and only finished when it did on Wednesday evening because the length of the clauses and the multiplicity of the amendments had reduced all concerned to a condition in which they wanted at all costs to get something through the House and on to the statute book A most interesting feature of the Defence Bill is that the work to be carried out under its provisions is very much more extensive than even the minister in charge realises

A great deal of attention has been devoted recently to the organisation of the casualty services and the changes have been so great that it is doubtful if the ministers concerned are even now fully informed of their extent It is common form now that the hospital organisation in London is to be in sections radiating out into the country around The head of the section is to be a teaching hospital and in the section going out are all the other parts of a complete hospital scheme including the "base" hospitals But what is not realised is that the scheme for giving first aid to and collecting casualties has been very greatly modified as the result of the teaching of the A R P school in Cromwell Road

Up to the present the terminology of first aid and hospital work in connexion with civil defence has been based on the experience of trench warfare in the 1914–18 war The new terminology now introduced is based on the war we are now waging for position and technical advantage before the guns go off and the bombs explode Every aeroplane invention, every increase of aeroplane speed or of bomb carrying capacity or of defence against aeroplane attack alters the civil defence programme Gas is less of a danger and less of a problem now that it was a year ago, because our gas defence is better on the one hand and the opportunity for gas attack, owing to the height at which aeroplanes can be compelled to travel, is on the other much less

In this new type of war, the exact characteristics of which are gradually emerging, there will be only two zones in the country The first will be the zone in which casualties will occur, the collecting zone, and the second the zone to which casualties will be sent, the evacuating zone In the collecting zone which will cover the cities and other vulnerable areas, the services which are in the "front line" will be of primary importance and they will all have to work together There are the rescue and demolition squads the fire fighting squads the decontamination squads, the repair squads, and the first aid parties They are called first aid parties now, and not stretcher bearers because their primary duty will be that of giving first-aid and then stretcher-bearer duty will be subsidiary to that

The medical problem in case of attack is becoming clearer Attack, it is to be presumed, will be by flights of aeroplanes which will be flying at a height of over 15 000 feet and at a speed of 250–300 miles an hour At that height and speed the maximum accuracy of bombing aim is not very great In order then that any objective may be hit, bombs will be released in a pattern around the objective and an area say 300–400 yards in diameter will be seriously damaged In that area with aeroplanes of present bomb carrying capacity you may have 600 or more casualties But you will not have casualties in ones or twos scattered over a wide area. There may be patches of pattern bombing and their casualties fairly close together, if important objectives are close together but otherwise wider separation of damaged patches with much unaffected territory between will be the rule.

To deal with these casualties a concentration of all the types of services operating in the streets will be required The first-aid parties will be equipped in the future with a motor-car to take them about and one or more (adapted) ambulance vehicles for sitting and lying wounded The modus operandi of a first-aid party when it is notified that an attack has been made and casualties caused will be to go as near as possible to the damaged area with their vehicles and then walk or climb over ruins on foot to the casualties themselves. The first duty will be immediate first-aid; the second duty will be the vitally important decision as to disposal This decision must be made by the first-aid party, or it cannot be made until a first-aid post is reached And if all casualties go to the F A P then every raid will be followed by a period in which the F A P. is surrounded by a crowd of people struggling to gain admittance—in most pitiable conditions The duty of decision as to disposal will follow simple rules now being considered by the Home Office and it is a decision which first-aid parties can be taught to make. The decision as to disposal will vary between (1) home, (2) first-aid post; (3) hospital of first reception (formerly casualty-clearing hospital); or (4) base hospital There will no doubt in practice be other types of hospital, as happened in 1914–18, for particular types of injuries

The teaching hospitals in London which are to be at the head of each section will function firstly as first-aid posts and secondly as hospitals of first reception, limited to 200 beds. It is the intention of the scheme that all surplus beds and bedding and all surplus instruments and supplies (surplus, that is, to an establishment of 200 beds) shall be sent out of London to the base hospitals of one kind or another It is hoped that this will be done; but certain authorities are already being "sticky" about it.

First-aid parties and other "front line" services will remain under the Lord Privy Seal direct—that is, under Home Office organisation—and this section includes the police. First-aid posts and hospitals will be under the Ministry of Health It is still a weakness of the general planning of the medical services that there are not enough first-aid party volunteers and not enough of first-aid post personnel However, plans of training—including training of medical practitioners themselves—are also being made, so by the time that peace becomes assured we shall be completely ready.

FROM THE PRESS GALLERY

Hospital Accommodation for Air-raid Casualties

IN the House of Commons on May 23, when the Civil Defence Bill was considered in Committee, Mr. BERNAYS, parliamentary secretary to the Ministry of Health, moved an amendment which made it clear that the Minister could arrange for removing mental patients as well as ordinary patients to other institutions to make room for casualties in an air attack.—Sir JOHN ANDERSON, Lord Privy Seal, assured Mr. Ede that the clause which excludes from the duties of the council the erection of new buildings was intended to exclude a block of new wards or other structures of that kind within the existing hospital, and not merely a new hospital or other complete building.

Evacuation and Public Health

When the discussion of the bill was resumed on May 24, Mr. EDE moved an amendment providing that local authorities should have power to reserve premises compulsorily and to impose restrictions on transference. He said those responsible in the reception areas had misgivings as to whether the accommodation that had been offered would be available. It would be a disaster if when the children allocated to a particular village or small town were evacuated it was found that a day or two before someone had come out from the town and by paying a fabulous sum of money had deprived them of the opportunity of placing the children there. Authorities in the reception areas should be given power to reserve the accommodation which had been voluntarily offered to the Minister of Health in response to his appeal.—Dr. HADEN GUEST agreed with Mr. Ede that the places to which people were going should be definitely earmarked in advance. Otherwise there would be a danger of overcrowding in the reception areas which would be extremely disadvantageous from the health point of view.—Mr. ELLIOT, Minister of Health, said that in the choice of those to be evacuated priority had been given to children and the organised movement under the Government scheme would therefore comprise school children who would travel in school units with their teachers and younger children who would go with their mothers, or some other responsible person On the results of the survey that had been carried out the allocations of the priority classes had been made to the reception areas, and the responsible authorities had been notified as to the numbers that would be dispatched to their charge. The general plan of the bill was to confer on the Government and other bodies powers which must be exercised in peace-time, while the powers necessary after the outbreak of hostilities would be held in readiness in the shape of draft regulations to be promulgated if an emergency arose. The powers for the compulsory provision of accommodation, or in other words billeting powers, were to be included in the regulations and not in the present bill. He would be prepared to take power in the present bill, under which it would be possible for the Minister to promulgate regulations to deal with billeting as soon as he was satisfied that emergency was imminent.

The Medicine Stamp Duties

In the debate on the second reading of the Finance Bill in the House of Commons on May 25 Mr. GRAHAM WHITE said he was at a loss to know why at a time when money was so badly needed the Chancellor of the Exchequer should have so precipitately abandoned an income of £750,000 a year by the remission of the medicine stamp duties. There was no reason to curtail the privileges of those who had been in the habit of selling and distributing these products, but it seemed to him that the way would now be open for the sale of drugs without disclosure of contents or formula through slot machines, by hawkers and in other ways, and he did not think that anyone could suggest that that was in the interests of the health of the community. Many of these prescriptions and nostrums were in the nature of pain killers. A person in pain took one to obtain relief and then went on taking the drug with the result that great injury was inflicted on him—Sir JOHN SIMON, Chancellor of the Exchequer, said most careful work had been done on the subject by a select committee and he had examined the report of that committee with great care. The committee were entirely convinced that the present archaic system of taxation should be repealed, and they suggested something to take its place. The present duties could not be maintained because they were unworkable, and the Government were challenged as to whether they were working them lawfully The alternative scheme suggested by the committee was not practicable. He did not think that the proper way to deal with quack medicines—if they could identify them by this sort of process—was by charging a small tax on those which were sold It was essentially a matter for control and regulation by the law of public health. It was not sound to say that some medicines were good, t those should not be taxed, while others were ck medicines the sale of which would be permitted ject to a small tax It was the most difficult thing the world to draw a line between a good medicine l a bad one

Mr Wakefield said as far as he could gather ormed medical and other professional opinion very initely was that harm might come to the people a result of the repeal of these duties It was erally felt that the door would be left open for iscriminate advertising and for placing various nedies on the market in a way which could not be ne now That would undoubtedly be harmful to health of the people There was a professional dy who would be harmed by the repeal of these ties, namely, the qualified chemists who constituted essential unit in the national health-insurance stem Up to now these chemists had certain vileges in the sale of these medicines, and if they re withdrawn there would be a considerable falling in the number of suitable candidates for the ofession

Medical Students and Military Training

In the House of Lords on May 25 the Military aining Bill was considered on report Lord Addison ved an amendment to permit any person to be empt from liability to be called up for military ining on the ground of his industrial skill He said at as the bill stood large numbers of highly skilled en in most critical occupations would be called up st at the end of their apprenticeships when their ill was almost at its highest point —The Earl of nslow said he would like to put the case of doctors was quite inconceivable that a doctor could be ployed in the Army in any other capacity than at of an officer of the R.A.M.C but in war time might, of course, be also employed to look after e civil population, or take part in other activities e would, however, always be employed as a doctor ow it seemed that the young medical student of or 21 doing his six months' training in the Army ould be taken away from his training as a doctor r a period which would really be contrary to the blic interest, because the country wanted him as doctor and not as a soldier He suggested that if e medical student served for a month or two months at would not hamper him very much, because he ight then go back to the hospital, or even to a ilitary hospital which would perhaps teach him ore than he might learn if attached to the R.A.M.C serve, or he might do other training if required —e Earl of Birkenhead said that the Government d not feel justified in taking power to exempt men this age from military training They hoped and lieved, however, that most of these men would have eir training on some of the large number of technical bs which now existed in the Army

On the motion for the third reading of the bill, e Earl of Munster said that there were three ctors which they had to take into account in dealing th the question of medical students First there as the period of their course at which medical udents did their military training If that was stponed until they qualified he understood they ould come up for training at the age of 25 and in at case this period would not occur until three ars had elapsed Secondly, the number of medical udents at one time and the training facilities which ould be available had also to be taken into consideration. Lastly, the fact that the R.A.M.C militia quired men who would remain in the R.A.M.C nursing orderlies when they were required had so to be taken into account These were all matters out which he could unfortunately give no further formation at this stage —The bill was passed and e Royal Assent was given to the measure on May 26

Both Houses of Parliament adjourned on May 26 r the Whitsun recess The House of Lords will reassemble on June 6 and the House of Commons on June 5

QUESTION TIME

THURSDAY, MAY 25

First-aid Posts in Islington

Dr Haden Guest asked the Minister of Health whether he was aware that in Islington, with a population of over 300,000 within 3000 acres, there was a shortage of premises suitable for use as first-aid posts, that the board of management of the London Fever Hospital had refused to permit the borough council to equip and use a part of the hospital premises which was isolated from other buildings until the entire evacuation of the hospital had been carried out in time of war, although he had already approved the proposal in principle, and whether he would take steps to see that the management board of the hospital altered their decision —Mr Elliot replied I am aware that the borough council have had some difficulty in finding enough suitable premises as first-aid posts but eight have now been located and these will be supplemented by four mobile units The London Fever Hospital has now agreed that one of the eight posts should be located in the hospital

Finances of Voluntary Hospitals

Sir George Broadbridge asked the Minister of Health whether he was aware of the serious financial condition of the voluntary hospitals of this country, particularly in London, due principally to reduced amount of subscriptions and falling off in donations and legacies, and whether, as this position was due to lower interest bearing securities and increased taxation and generous public response to the Czechoslovakian and Jewish refugee appeals, he would take steps to assist these hospitals and so prevent them reducing the number of wards or closing down altogether —Mr Elliot replied I recognise the financial difficulties confronting certain of the voluntary hospitals My hon friend knows that there has recently been consultation, in regard to London, between representatives of the London County Council, the King Edward VII Hospital Fund and the Voluntary Hospitals Committee for London I am keeping in touch with these discussions and I have the matter under close consideration

Sir Henry Morris Jones Is my right hon friend aware of the very serious anxiety which the governing bodies of many of these hospitals in the big cities, and also the staffs are going through at the present time? They have rendered a magnificent service to the state and will he consider their financial position?—Mr Elliot: Yes, Sir, those are the matters which are being considered

Evacuation and Epidemics

Mr Stokes asked the Minister of Health whether he was satisfied that the epidemiological aspects of the evacuation of children under the air raid precautions scheme had been given the consideration which their serious nature demanded —Mr Elliot replied The attention of local authorities has been directed in paragraph 54 of the Ministry of Health's Memorandum Ev 4, supplemented by paragraphs 13 and 14 of the Board of Education's circular 1469, to the importance of preventive measures against the risk of the epidemic spread of infectious diseases Arrangements have also been made to supplement the existing public health laboratory services by the establishment of additional laboratories in localities where it is thought that they will be most needed

FRIDAY, MAY 26

Panel Doctors' Surgeries

Dr Haden Guest asked the Minister of Health whether he had any statement to make regarding the investigation now being made into the complaints of the conditions of panel doctors surgeries —Mr Bernays parliamentary secretary to the Ministry of Health, replied No complaints of the conditions of panel doctors' surgeries are at present before my right hon friend No investigation, therefore of the nature indicated is being made by him nor is he aware of any need for such an investigation.

OBITUARY

CHARLES H. MAYO

M.D., D.SC., M.CH., LL.D., F.A.C.S., F.R.C.S., D.P.H.

THE Mayo Clinic is the most characteristic expression of American medicine. Beginning as a small hospital in an insignificant country town it has developed into an immense institution for diagnosis, treatment, and research, established firmly on the principle that every patient shall have the full benefit of modern knowledge. To this end has been directed the same rational planning and the same collective effort that build efficient factories and machines. But though the clinic is thus a product of its age it is also a work of genius. Of its two creators, the younger brother, Charles Horace Mayo, died in Chicago on May 26 at the age of 73.

Their father, William Worrell Mayo, came from Eccles in Lancashire and learnt chemistry at Owens College. After an adventurous career he finally settled at Rochester, Minnesota, in 1863. Two years previously he had married a woman of Scottish parentage, Louise Wright, of New York state, who had soon afterwards displayed great courage in the Sioux rising and massacre of 1862. Of their five children the two boys, William and Charles, very early assisted their father in his practice; and afterwards they would often recount how Charles had to stand on an upturned biscuit box in order to help at operations. When in 1885 his time came for a more formal education he entered Chicago Medical College, returning to his father's surgery in the vacations, and in 1888 he graduated at the Northwestern University.

It was in the following year that the father, then 70, and the two sons opened their new hospital, St. Mary's, with thirteen patients and five nurses from the Roman Catholic sisterhood of St. Francis. Neither William nor Charles had worked as hospital interns; but that, they said, made them more careful. Despite opposition in the town they won increasing success, and soon St. Mary's was able to offer much better surgical facilities than was usual in western towns. At first all three Mayos still worked as general practitioners, but the two sons early showed a surgical bent. They were ready to tackle all sorts of surgery, and as early as 1895 Charles was doing most of the operations on the eye, ear, nose, throat, bones and joints. When the time came to find associates who could take over part of the work they followed at once the policy of training their own associates—a policy which, it has been said, "has resulted in a surgical corps with a perhaps unparalleled unity of ideals and standards, but in which personal initiative has been fostered to a remarkable degree."

Prof. Grey Turner recalls that at the time of his first visit, now 33 years ago, Charlie and Will, as they were always affectionately called, with E. Starr Judd as assistant, did almost all the operative [illegible] "But then the place was little more than a [illegible] and on arrival at the station the cabmen called [illegible] 'Clinic, Hospital, or Cooks Hotel?' as repres[illegible] the sum of the activities of the place. Now [illegible] hospital city and the largest single medical [illegible] in the world. In all this remarkable develop[illegible] Charles Mayo played a notable part. He was [illegible] years younger than William, but throughout [illegible] they worked together as one, and there was [illegible] devotion between them. Throughout all their [illegible] successes, as I have often heard them declare [illegible] 'always shared the same pocket-book (i.e., note-ca[illegible]

The history of the Mayo Clinic and Hospital [illegible] been written elsewhere and will be written [illegible] From a small local and private venture it has [illegible] a national and almost public institution, [illegible] 1919, its properties, already of enormous [illegible] were made over to an appropriate association, [illegible] two years previously the University of Minne[illegible] had benefited by the establishment of the [illegible] Foundation fund for medical education and re[illegible] From their father's day the brothers had acc[illegible] patients regardless of their ability to pay, in [illegible] about 30 per cent were paying nothing to the [illegible] and 25 per cent paid only enough to cover the [illegible] of examination. But large sums were neverthe[illegible] earned and after salaries had been paid to the [illegible] including the two chiefs, and provision for up[illegible] and expansion had been made, the rest went [illegible] endowment of research, education, and welf[illegible] The Mayos held, as they said, that the success [illegible] the clinic, past, present and future, "must [illegible] measured largely by its contributions to the [illegible] good of humanity." The extent of these con[illegible] butions cannot yet be judged, but the existence [illegible] the clinic and the fame of its methods have ha[illegible] profound effect on American medicine, and thus [illegible] medicine throughout the world.

The influence has not come so much thr[illegible] outstanding surgical or medical discoveries [illegible] has flowed directly from the conception of Wi[illegible] and Charles Mayo that modern medicine dem[illegible] not an alteration in the individualistic appr[illegible] of the patient to the doctor, or the doctor to [illegible] patient, but an organisation of medical men [illegible] brings to the service of the patient all known fac[illegible] for efficient diagnosis and treatment. In the [illegible] Clinic the doctor still consults with his patient [illegible] the quiet walls of his examining-room, just as [illegible] doctor does the world over; but he does so with [illegible] the diagnostic aid of the clinic within his easy [illegible] Immediate answers to doubtful points are avail[illegible] He can utilise the experience of hundreds of spec[illegible] in a moment. He lives in a medical world [illegible] every human fallible factor has been as far as po[illegible] eliminated. The system is as fool-proof as [illegible] ingenuity can make it. Nevertheless, it is cla[illegible] the essential patient-doctor relationship re[illegible] undisturbed, there still must exist confidence, [illegible] and faith between them. There are few ho[illegible] today in any civilised country which have not [illegible] in some way influenced by the experiences of [illegible] great institution.

It would be easy for a machine of this [illegible] become sterile and lifeless. The Mayo Clin[illegible] never that. Charles Mayo was its soul. He w[illegible] humanising element in the organisation. More [illegible] anyone he was responsible for the fact that [illegible] members of the most highly individualistic pro[illegible] uld be induced to live and work together in a small wn on the edge of nowhere—and like it ' He it is who established that tradition which enables many men distinguished in their own particular lds to work in peace and harmony for common eals Moreover, this same integrative quality und expression in an even wider sphere He had a ir for the interpretation of medical knowledge to the y public Though he was perfectly at home with e great he never lost that common touch which abled him to talk to the most humble in terms nich could be understood and appreciated As a sult he had a deep interest in public health and the welfare of the community He battled fiercely r anything which made his country a better place live in In this usually dangerous field for medical en, in which the press must play a part, he was ually successful His "news value" was enormous it he never offended his colleagues nor antagonised e press He was honoured by countless universities d scientific bodies but these distinctions he accepted erely in so far as they honoured his colleagues and e clinic as a whole He regarded himself simply another member of the institution which by cident bore his name This was typical of his iselfish life

As a surgeon he had remarkable versatility and as responsible for innovations over a wide field It is characteristic," writes Prof J R Learmonth, that his first six contributions to medical journals alt with such varied subjects as glandular tuberlosis, cerebral surgery, nasal sinusitis, injuries nerves, skin grafting, and obstruction of the mmon bile duct In all he wrote or shared in 13 papers of professional interest, although in his ter life he narrowed the field of his technical interest, maintained the same broad outlook on surgery general, and his contributions were always aracterised by clarity and proper perspective he amount of successful surgical work which he complished could have been overtaken only by e gifted with great intellectual and physical powers, well as single minded devotion to his craft, in ldition he had an uncanny knack of inventing ocedures which were simple yet entirely efficacious, erhaps the most valuable of which was his brilliant ork on transplantation of the ureters to the colon hat he was intrigued by this aspect of surgery is ear from his paper, published six years ago, on wrinkles and recipes in intestinal surgery ' s a clinician he had a unique position At once at ise with any patient, he had the faculty of getting imediately to the root of the matter, and of enlisting is patient's absolute confidence by his ability to ut the problem clearly in lay language, and by his ansparent sincerity His patients became and mained his friends Few men of his position in have commanded the same mixture of deep spect and genuine affection '

Another former assistant Mr A H McIndoe whom we are indebted for many of the more intimate tails of this notice, speaks of him as the perfect irgical chief 'Few there were who after five inutes' conversation did not fall beneath the spell f those twinkling eyes set in a half serious, half umorous face, of the quiet voice with its characristic dry twang and the head cocked a little on one de His method of expression was unforgettable le presented facts and figures in forthright manner ith apt allusions and illustrations drawn from atural history and comparative anatomy, sometimes ermane to the point under discussion sometimes ot He illuminated his picture with flashes of dry humour which kept his audience in a bubble of anticipation During the morning's work of anything from ten to fifteen major cases he might discuss the number of nails and match heads, the weight of charcoal and gunpowder which could be made from the constituents of the human body, he might philosophise about the gall bladder of the pocket gopher, the pineal eye of the tuatara lizard, the galls on his oak trees, the tuberculous lesions of turkeys' livers or a hundred other odd subjects, and between these divagations introduce sound clinical teaching drawn from the accumulated wisdom of his vast experience Those who listened year by year fascinated by his extraordinary discourse never knew what new and curious information his wide reading and shrewd observation would bring to light

"As an operator he was rapid, dexterous and direct, bold when necessary, conservative when possible, always gentle He was difficult to assist, for, contrary to the usual practice of the clinic, he did not try to standardise his technique He was forever trying new methods, unexpected approaches to difficult problems, variations in routine which were not easy to anticipate Dr Will thought that Dr Charlie would have made a brilliant plastic surgeon, and indeed he loved anything of a constructive nature He never ragged his assistants and was as unfailingly kind to them at the operating table as he was outside the theatre I can vividly remember my first nervous clumsiness as his assistant when he suddenly interrupted the curious mixture of half scientific jargon and half popular medical lore with which he delighted his crowded theatre to whisper in my ear—'You're doing fine, so long as you don't drop the bits on the floor I don't mind ' Equally well can I remember the last sad day in 1929 on which he operated—a gastric resection interrupted by his having a retinal hæmorrhage. The day had a particular significance, for in the adjoining theatre the next operation was to witness his own son's initiation as assistant to his famous father This was a ceremony to be watched with interest and appreciation by the whole clinic and keenly anticipated by father and son It never took place How well the son is following in the father's footsteps is evident to anyone who visits the clinic today"

Charles Mayo was a great traveller and was personally known to very many of the surgeons of Europe In Great Britain he received honorary fellowships from the surgical colleges of England and Ireland and from the Association of Surgeons In his own country he held the presidency of the American College of Surgeons, the American Medical Association the American Surgical Association, and innumerable other bodies During the late war, alternating with his brother, he was chief consultant for all surgical services of the United States army From 1912 onwards he was medical officer of health for Rochester, Minnesota, where his life was spent

CHARLES RALPH COOKE-TAYLOR

O B E., B A. OXFD, M R C S, D P M

Dr Cooke Taylor, who has died in London at the age of 55, did not qualify in medicine until 1927 when he was already 43 He came of a family of social reformers and after a brilliant career at Oxford University, where he took his degree in 1906 with honours in jurisprudence, he was called to the bar in 1910, and in the same year stood for Parliament in the Holborn division After that he contested Dulwich unsuccessfully on eight occasions the last at the general election of 1935 at this time he was president of the Monmouth Liberal Federation and hon. treasurer of the University of London Liberal Association. His interest in medicine began when during the late war he joined a medical unit for service in Serbia and after capture by the Bulgars he began to work for refugees and obtained an insight into shell-shock. Soon after qualifying in medicine he took a psychological diploma and became visiting physician to the British Hospital for Nervous and Mental Disorders and psychologist to the Ex-Service Welfare Society. His name appeared in the Coronation honours list He was unmarried.

DONALD ROSE PATERSON

M D. EDIN , F R C.P.

Dr D R. Paterson, who died at his home in Cardiff on May 23, had been a general physician before he specialised in diseases of the ear, nose and throat. After qualifying with honours in Edinburgh in 1883 he was house-surgeon at the Northern Infirmary, Inverness, and then at the Cardiff Infirmary with which he remained associated for the rest of his life In those early days he was lecturer on materia medica at the South Wales University College, pathologist to the Glamorgan and Monmouthshire Infirmary and hon secretary to the Cardiff Medical Society A number of short papers which he then wrote covered a wide range of clinical subjects Having become assistant physician to the infirmary he resigned this appointment to take charge of the ear, nose and throat department, with the teaching of laryngology in the Welsh National School. On one of his many visits to continental clinics he met Killian and became interested in the direct examination of the œsophagus and upper air-passages, being one of the first to use the bronchoscope in this country. He bec corresponding member of several foreign laryng societies and was elected F.R C.P. in 1926 friend and confrère writes: "Paterson had g which placed him among the most trust respected figures in his professional circle, w as a physician or as a specialist. Apart from p sional excellence his richly endowed and cultured intellect made him a choice comp It was a stimulating experience to be i company He was a fine companion, an e worker and a cultured gentleman" In later Dr. Paterson found time to develop his ta archæology and became hon curator of the municipal museum, being later elected a mem the council of the National Museum of Wale 1897 he married Constance Mary, elder daug Richard Baker-Gabb of Abergavenny. They daughter and three sons, of whom the eld killed in 1917 while on active service in Belgium

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Dr. JOSEPH THOMPSON, who died in Nott on May 22, was the son of a local practition was born there in 1844 He was educat University College, London, and qualified in going at once into partnership with his fathe was appointed surgeon to the Nottingham G Hospital and the Nottingham Hospital for W and was an active member of the staff of both his retirement in 1910 He was a prominent mason The eldest of Dr. Thompson's fam five—four sons and one daughter—is Dr. Thompson, who is in practice in Nottingham wife died two years ago

MEDICAL NEWS

University of Oxford

Dr Freda Pratt has been appointed first assistant in the Nuffield department of anæsthetics in the university.

University of Cambridge

On May 27 the degrees of M.B., B.Chir. were conferred by proxy on R D S Jack

University of London

Dr G W Pickering has been appointed to the university chair of medicine at St Mary's Hospital medical school

Dr Pickering, who is 34 years of age, was educated at the Royal Grammar School, Newcastle-on-Tyne at Dulwich College, and at Pembroke College, Cambridge, where he was a scholar He obtained a first-class in both parts of the natural sciences tripos and in 1926 went to St Thomas's Hospital While working as a student he taught biology at Westminster school In 1928 he qualified, and in the following year he was awarded the Mead medal and Wainwright prize for medicine at the hospital He was resident anæsthetist and house-physician, and in 1930 graduated M B Camb and became M R C P From St Thomas's he went to University College Hospital as assistant in the department of clinical research under Sir Thomas Lewis, F R S In 1931 he was appointed to the permanent scientific staff of the Medical Research Council and in 1932 he presented, with W Hess, a preliminary account of his work on the experimental production of headache This has been followed by many other reports, especially on experimental hypertension and allied problems, and since 1936 he has been lecturer in cardiovascular pathology Last year he was appointed Herzstein lecturer to the University of California and Stanford University, San Francisco, and spent two months visiting these and other schools in the United States He was elected F R C P in 1938

University of Leeds

The university court decided on May 24 to confer the hon. degree of D Sc on Dr. L A Rowden, hon. director of the electrotherapy and X-ray departments of Leeds General Infirmary.

Harveian Society of London

On Thursday, June 8, at 7.30 P.M , the annual Buckston Browne banquet of this society will be held at the Connaught Rooms, Great Queen Street, W.C 2.

Society of Apothecaries of London

At recent examinations the following candidat successful —

Surgery—R M Coplans, S K Krishnan, J L S A Schuyler

Medicine—S K Das, W D Jenkins, E L Moll, J E Smith, and W E Swanston

Forensic Medicine—S K Das, W D Jenkins, E J R Rose, E Smith, and W E Swanston

Midwifery—E F Gleadow, A N Kalra, and E C G

The following candidates, having completed th examination, are granted the *diploma* of the *entitling them to practise medicine, surgery and mid*

S K Das, Bengal and St George's, E L Moll Guy Rose, Charing Cross, and W E Swanston, St Georg

Royal College of Surgeons of England

On June 2 Miss Dorothy Collier will deliver a Hu lecture on facial paralysis and its operative trea Other Hunterian lectures will be given on June 1 Dr D W Gordon Murray will speak on hep thrombosis, and on June 14, when Mr George A will describe gastroscopic observations on the hea chronic gastric ulcer. On June 5, 7, and 9 Mr John B will deliver three Arris and Gale lectures on expe surgery His subjects will be hyperthermia, s hypertension, and blood conservation methods Th lectures will be held at the college, Lincoln's Inn F London, W C 2, at 5 P M

Medicine Stamp Act

The Socialist Medical Association circulate a st objecting to the proposed repeal of the Medicin Act which is, they consider, a retrograde step b (*a*) every committee which has discussed this has reported in favour of publishing formulæ drug package, (*b*) it will remove even the semblance of control over these preparations; (*c*) lead to more extensive *self-medication*, and (*d*) unlikely to mean any saving to the consumer, b increased profits for the manufacturers

ng's College Hospital

Mr V E Negus, F R C S, has been elected president the Listerian Society for next session L D de Launay d A B Kinnier Wilson are the secretaries

ndon Hospital

Mr Hugh Lett, P R C S, consulting surgeon to the spital will present the prizes to the students on ursday, June 29

culty of Radiologists

The first annual meeting of the faculty, which was ently formed by the amalgamation of the British sociation of Radiologists and the Society of Radio rapists, will be held in Liverpool on June 9 and 10 der the presidency of Dr R E Roberts Further rticulars will be found in our Medical Diary

dian Medical Service

The annual dinner will be held at the Trocadero staurant, London, W 1, on Wednesday, June 14, 7 15 P M, when Major General C W F Melville will side Tickets may be had from Major Sir Thomas rey Evans, the hon secretary, Hammersmith Hospital, icane Road, W 12

ence and Society

On May 25 at the first public meeting of the new division the social and international relations of science ablished last year, its chairman, Sir Richard Gregory, R S, said it represented a deliberate step by the British sociation towards the recognition of the obligations of ogressive scientific knowledge to the needs of a changing ciety Scientific workers could no longer remain lifferent to the social consequences of their discoveries of Ernest Barker, Litt D, speaking on the impacts science on society said that the student of physical ence must serve one mistress only—her name was the scovery of truth—regardless of consequences and regard s of social impacts But when impact happened and sequences declared themselves he should bring his entific training and technique to help in correcting and ing the consequences where necessary He concluded quoting Plato's phrase "The responsibility rests with chooser: science itself stands free"

sociation of Industrial Medical Officers

At the invitation of Messrs Rowntree and Co the nual provincial meeting of the association was held on ay 19 and 20 at the Cocoa Works, York where the dical department consists of two whole time medical icers, a nursing staff of four, the dental department, d the optician Mr A C Bloomer who has been full me dental surgeon for over 20 years, explained that ice 1904 a dental service had been available to employees all grades without age restriction, and in the case of ctory workers a wage payment at minimum day rates is ade for the time spent at the department Dental amination of juvenile entrants is made a routine, rental permission for any extractions required being tained in 95 per cent of cases No charge is made for lings For dentures the scale of fees is based on the ing of insurance societies Local anæsthetics are given the minimum charge of 1s gas-and-oxygen anæs esia is largely used Experience has shown the benefit employee and to employer of dental treatment during rking hours in the avoidance of minor illnesses Miss P Stevenson M A, gave an account of the work done the psychological department All prospective ployees are examined by means of performance or itten tests to determine their suitability for jobs e performance tests measure such abilities as hand d eye coördination muscle control and coördination ed and accuracy of perception and finger dexterity e written tests measure among other things the candi ate's powers of comprehension reasoning and deduction r apprenticeship to trades certain assembly tests are n in addition The department takes an active part the selection and training of teachers and other super sory staff advising the management on problems cerned with labour and undertaking research work on various questions arising therefrom—e g accident oneness

National Baby Week

National Baby week will be held from July 1 to 7 In its propaganda this year the council is laying stress on fathercraft in the child welfare movement Further particulars may be had from the secretary of the National Baby Week Council, 117, Piccadilly, London, W 1

Service Appointment

Surgeon Rear Admiral B Pickering Pick has been appointed to be house governor and medical superintendent of King Edward VII Convalescent Home for Officers at Osborne, in succession to Major General J W West, who *retires in October*

British Red Cross Society

At a meeting of the council of this society held on May 18 it was announced that in order to effect the fullest coöperation with the Government's national defence schemes the county branches of the society had been grouped in conformity with the civil defence regions and a regional subcommittee would be set up to act as a link between headquarters and the branches The conditions of service and allowances for the society's personnel have not been fully determined, but it is hoped that the Government's proposals will be announced shortly

During the last year the society has manned over 890 first-aid stations at camps and territorial hospitals and treated over 20 000 casualties The ambulance service has carried 23,000 patients, while the blood transfusion service has answered over 6600 calls Medical supplies and foodstuffs were also dispatched to the sick and wounded in China and Spain Since last November 55 men's and 431 women's new detachments have been raised with a trained personnel of 1271 men and 9599 women

Streptococcal Sore-throat in New York State

A statement issued by Dr Edward S Godfrey, jun, state commissioner of health for New York describes an outbreak of septic sore throat in 502 persons of whom 178 were children under fifteen The first 15 cases were discovered among school-children in Malden on May 5, next day it was determined that the outbreak was due to the use of raw milk distributed by one dealer, and all products from the suspected dairy were required to be pasteurised An infected cow was found on the same day (May 6) and the outbreak thereafter declined rapidly While the last reports showed a total of 502 cases it was estimated that there would be a maximum of 600 cases; there have been 3 deaths, all in people of advanced years The disease was notified as streptococcal pharyngitis and investigation disclosed that at least 455 patients consumed milk secured from the one dealer, this representing 91 per cent of all of the septic sore throat cases investigated "As nearly as can be determined," says Dr Godfrey "the cases are attributable only to the use of raw milk"

Spanish Emigrants

The Mexican government has declared its willingness to absorb many of the refugees now in France who have fled from Spain, provided they are Spanish born and Spanish speaking The National Joint Committee for Spanish Relief is working with the newly formed British Committee for Refugees from Spain to arrange the transport of these emigrants Once they arrive the Mexican government will be responsible for them and will find them work Families are being reunited to begin a new life together and one ship with 1800 refugees aboard has already sailed About £15 provides a passage and equipment for one adult and donations for the "refugee ship campaign" may be sent to the committee at 4 Great Smith Street, London, S W 1

Almost all the emigrants after the hardships they have endured are in need of some medical care and the Spanish Medical Aid Committee has undertaken to find the necessary medical stores and to supply the Spanish doctors and international doctors who are accompanying them with instruments and equipment for the voyage and for their new life The committee has also undertaken to arrange for the medical examination and possible inoculation of the refugees before embarkation Work among those who still remain in the refugee camps in France must also be continued and they ask that gifts should be sent to them at their new address [illegible] Great Russell Street, W C 1

Appointments

Bateson, W G, M B Belf, assistant medical officer at the Royal Eastern Counties Institution, Colchester

Borg, Charles, M D Malta, assistant medical officer of health for Richmond

Cross, A G, M B Camb, F R C S, hon assistant surgeon to the ophthalmic department of the Princess Beatrice Hospital, London

Kenyon, A L, M B Manc, F R C S, assistant surgeon to the Royal Manchester Children's Hospital

Knight, G C, M.B Lond, F R C S, hon neurological surgeon to the Princess Elizabeth of York Hospital for Children, London

Laycock, H T, M B Camb, F R C S, resident surgical officer at Addenbrooke's Hospital, Cambridge

Lister, Arthur, M B Camb, F R C S, assistant surgeon to the Royal London Ophthalmic Hospital

Mackeith, S A, M R C S, D P M, deputy medical superintendent at Graylingwell Hospital, Chichester

Murray, L H, M D, B Hy *Durh*, *D P H*, medical superintendent of Infectious Diseases Hospitals for the Lanchester Joint Hospital Board

*__Norwich, Isadore__, M B Witwatersrand, F R C S E, resident surgical officer at Booth Hall Hospital, Manchester

Oakley, W G, M D Camb, M R C P, assistant physician to the diabetic department, King's College Hospital, London

Paul, F A, L R C P E, senior assistant medical officer at the District Asylum, Inverness

*__Peach, Emily M__, M D Manc, D P H, consultant dermatologist at the Booth Hall Hospital, Manchester

Ryan, J J, M B N U I, D P M, senior medical officer at Menston Mental Hospital, Leeds

Small, H A D, M B N Z, F R C S, surgical registrar at the Royal Cancer Hospital (Free) London

Snaith, L M, M S Durh, F R C S, M R C O G, maternity officer for Newcastle-on-Tyne

*__Somerford, A R__, M D Manc, consultant dermatologist at the Crumpsall Hospital, Manchester

Ward, Eric, M R C S, D P H, assistant county medical officer of health and district medical officer of health for the borough of Arundel and Chichester rural district

Vacancies

For further information refer to the advertisement columns

Arlesey, Beds, Three Counties Mental Hosp—Sen asst M O, £650

Aylesbury, Royal Buckinghamshire Hosp—Second res M O, at rate of £150

Bangor, Cærnarvonshire and Anglesey Infirmary—Sen and jun H S's, £170 and £120 respectively.

Barnstaple, North Devon Infirmary—Sole res M O, at rate of £150

Belfast, Queen's University—Jun lectureship, £300

Belgrave Hosp for Children, 1, Clapham Road, S W 9—Outpatient M O, at rate of £150

Berkshire County Council—Asst M O, £500

Berkshire Education Committee—Asst school M O, £500

Birmingham City—Temporary asst M O H at rate of £600

Blackburn, Royal Infirmary—Res H S, £175

Bognor Regis War Memorial Hosp—Hon consultant ophthalmic surgeon

Bolingbroke Hosp, Wandsworth Common, S W 11—H S and cas O, each at rate of £120

Bristol University—Lectureship in pathology, £400 to £500

British Hosp for Functional Mental and Nervous Disorders, 72, Camden Road, N W 1—Hon physician

Cambridge, Addenbrooke's Hosp—H P, at rate of £130

Canterbury, Kent County Mental Hosp, Chartham—Jun asst M O, £350

Canterbury City and County—M O H and school M O, £800

Central London Throat, Nose and Ear Hosp, Gray's Inn Road, W C 1—Hon assts in outpatient dept

Cheltenham General and Eye Hosps—H P, £150

Chester City Hosp—Jun res M O, at rate of £150

Chester Royal Infirmary—H S to orthopædic dept, £150

Connaught Hosp, Walthamstow, E 17—H P, H S, and cas O, each at rate of £110

Cornwall County Council—Deputy county M O, £720

Croydon, Mayday Hosp—Two jun res asst M O's, each £300

Derbyshire County Council—Temporary M O, at rate of £600

Doncaster Royal Infirmary—H S to ear, nose and throat and ophth depts and res anæsthetist, at rate of £150

Dover Borough—M O H and port M O, £900

Dreadnought Hosp, Greenwich, S E 10—Receiving-room officer, at rate of £150

Evelina Hosp for Sick Children, Southwark, S E 1—Radiologist, £120

Glasgow, Redlands Hosp for Women—Jun asst in dept of general surgery

Glasgow Western Infirmary—Asst radiologist, £400

Greenwich Metropolitan Borough, S E 10—Asst M O, £500

Halifax Royal Infirmary—Cas O, at rate of £150

Hampstead General and North-West London Hosp, Haverstock Hill, N W 3—H S, at rate of £100

Hastings, Royal East Sussex Hosp—Jun H S, at rate of £150

Hertfordshire County Council—Asst M O for maternity and child-welfare work, £500

Hosp for Consumption and Diseases of the Chest, Brompton, S W 3.—Two surg registrars, each £150

Hosp for Women, Soho Square, W 1—Hon clin as

Huddersfield Royal Infirmary—H S to abnormal ma dept, and two H S's, each at rate of £150

India, Assam Medical Research Society, Shillong— officer, Rs 1000/- per mensem

Kidderminster and District General Hosp—Sen and jun H S at rate of £150 and £100 respectively

King's College Hosp, Denmark Hill, S E 5—Asst physi children's dept

Kingston County Hosp—Res asst obstetrician, and res physician, each £350

Larbert, Stirling District Mental Hosp—Asst. M O, £

Leeds, Meanwood Park Colony—Med supt, £800

London County Council—Res med supt for St James' Balham, £1300 Also asst M O, £600

London Hosp, E 1—Medical first asst and registrar, Medical outpatient first asst, £150 Also clin X-ray dept, £100

London University—Chair of pathology at St Thomas's medical school, £1200 Also external examinerships

Maida Vale Hosp for Nervous Diseases, W 9—Hon physician

Manchester, Christie Hosp and Holt Radium Institute— clin assistantships

Manchester, Crumpsall Hosp—Res asst M O, at rate of

Manchester, Duchess of York Hosp for Babies—Sen. res at rate of £125

Manchester City Education Committee—School M O, £

Manchester Royal Infirmary—Chief asst to surgical unit,

Manchester University—Asst director in dept of clinical gations and research at Manchester Royal Infirmary,

Middlesex Hosp and Medical School, W 1—Surg reg,

National Temperance Hosp, N W 1—Hon physician

Nottingham General Hosp—Res anæsthetist, at rate of

Oldham County Borough—Deputy M O H and asst officer, £750

*Oswestry, Robert Jones and Agnes Hunt Orthopædic H S, at rate of £200

Oxford, Radcliffe Infirmary—Surg reg, £400

Plymouth City General Hosp—Jun asst M O, at rate of

Plymouth Royal Eye Infirmary—Hon surgeon

Portsmouth Royal Hosp—H P, at rate of £130

Queen Mary's Hosp for the East End, Stratford, E 15— logist, £350 Also registrar to ear, nose and throat 50 guineas

Queen's Hosp for Children, Hackney Road, E 2—H P and O, each at rate of £100 Also asst surgeon

Reading, Royal Berkshire Hosp—Res H S res H S to depts, and res cas O, each at rate of £150

Rochdale Infirmary and Dispensary—Sen H S, £200

Rotherham Hosp—Cas H S, £150

Royal London Ophthalmic Hosp, City Road, E C 1—Path and curator, £650

Royal Masonic Hosp, Ravenscourt Park, W 6—Res surg O, rate of £250

Royal Northern Hosp, Holloway, N 7—Res M O, at rate of £70 Also second physician for diseases of the

St Albans, Hill End Hosp and Clinic, &c—Two H P's, at rate of £165

St John Clinic and Institute of Physical Medicine, Ranelagh S W 1—Asst surgeon to orthopædic dept Also clin to light dept

St Mark's Hosp for Cancer, Fistula, &c, City Road, E C H S, at rate of £120

St Mary's Hosp, W 2—Hon physician in charge of diseases of children

St Peter's Hosp for Stone, &c, Henrietta Street, W C assts to hon staff

Sheffield, Jessop Hosp for Women—Registrar, £250 Sen and res M O, each at rate of £150 Also H S's, rate of £100

Sheffield Children's Hosp—H P, £100

Shrewsbury Royal Salop Infirmary—Res surg O

Sittingbourne and Milton Urban District—M O H county M O, £800

South London Hosp for Women and Children, South Clapham Common, S W 4—Radiologist

Southampton, Royal South Hants and Southampton Hosp radiotherapist in new radium and deep X ray block, at

Southampton Free Eye Hosp—H S, at rate of £1

Stockport County Borough Education Committee school M O, £700

Stoke-on-Trent, North Staffordshire Royal Infirmary—H S aural and ophth depts, at rate of £150

Stourbridge Borough—M O H and M O to North Worc shire Joint Isolation Hosp Board, £800

Swansea County Borough—Asst M O, £500

Sydney University—University postgraduate lecture pathology and directorship of pathological unit Henry Hosp, £1500 (Australian currency)

Taunton, Taunton and Somerset Hosp—H P, at rate of

Tilbury Hosp—H S, at rate of £140

Tunbridge Wells, Kent and Sussex Hosp—Res surg O

Wakefield, Scalebor Park Mental Hosp—Asst M O, £

Warwickshire Voluntary Hospitals Council—Hon visiting to Coventry and Warwickshire Hospital

Warwick, Warwickshire and Coventry Mental Hosp, Deputy med supt, £650

West London Hosp, Hammersmith, W 6—Res cas O, of £100

Westminster Hosp, S W 1—Hon sen and jun clin dept of psychological medicine

Willesden General Hosp, Harlesden Road, N W 10—H assts Also refraction asst, 1 guinea per session

Worcestershire, King Edward VII Memorial Knightwick—Asst county tuberculosis officer

York County Hosp—H S to eye, ear, nose and throat £150

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* Subject to confirmation

Medical Diary

June 5 to June 11

SOCIETIES

L SOCIETY OF MEDICINE, 1, Wimpole Street, W 1

DNESDAY

History of Medicine 5 P M Prof M F Ashley Montagu ew York): Edward Tyson (1650–1708) Physician, omparative Anatomist and Anthropologist

DAY

Ophthalmology 4 30 P M cases 5 P.M, annual general eeting Mr A H Levy and Dr P Manson Bahr ilateral Keratitis and Cyclitis due to Filaria (Onchocerca olvulus) Infection in a European from Kenya.

URDAY

Surgery 2 15 P.M (Royal Infirmary, Leicester), cases r W D Jeans Medical and Surgical Treatment of oitre Mr D McGavin Chronic Non tuberculous pididymitis Dr Joan Walker Unusual Pathological pecimens

ILTY OF RADIOLOGISTS

DAY—10 A M (Liverpool Medical Institution) Dr R E oberts presidential address 2 P M Dr J L A Grout iseases of Bone 2 10 P M, Dr C G Teall A Radio gical Study of the Bone Changes in Anæmia and Leu umia in Children 3 20 P M Dr A E Barclay Radio gical Demonstration of the Adult and Fœtal Circulation

URDAY—10 A M, *Prof Henry Cohen Prof R E Kelly* rof W M Frazer Dr J Ralston Paterson Dr J F railsford The Cancer Problem

T LONDON MEDICO CHIRURGICAL SOCIETY

URSDAY—8 30 P M (Kensington Town Hall, W 8) Prof B S Haldane, F R S Congenital Disease (Cavendish ecture)

ICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

URSDAY—8 30 P M (11, Chandos Street W 1) Dr E B trauss Escape into Normality

CTURES, ADDRESSES, DEMONSTRATIONS, &c.

ERSITY OF EDINBURGH

ESDAY—5 P M (University New Buildings) Mr A L acharach Vitamin F

IDAY—5 P.M Prof C A Lovatt Evans, F R S etabolism of the Heart (*Sharpey Schafer lecture*)

AL COLLEGE OF PHYSICIANS OF EDINBURGH

URSDAY and FRIDAY—5 P.M. Dr Henry Yellowlees roblem of Adolescence (Morison lectures)

YMAN GILLESPIE LECTURE EDINBURGH

URSDAY—4 30 P M (Royal Infirmary) Miss Gertrude erzfeld The Acute Abdomen in Childhood

ONAL HOSPITAL FOR DISEASES OF THE HEART

URSDAY—5 P M (1 Wimpole Street, W 1), Prof W T itchie Acute Rheumatic Carditis (St Cyres lecture)

ARY'S HOSPITAL W 2

ESDAY—5 P M (Institute of pathology and research) rof J R Marrack The Chemical Bases of Immunity eactions

TISH POSTGRADUATE MEDICAL SCHOOL Ducane oad W 12

NDAY—4 30 P M Dr R C Wingfield Pulmonary uberculosis

DNESDAY—Noon clinical and pathological conference medical) 2 P M, Prof J H Dible Pathology of the *astro intestinal Tract (I)* 3 P M clinical and pathological onference (surgical) 4 30 P M Prof H W C Vines athology of the Adrenal Glands

URSDAY—2 15 P M Dr Duncan White radiological emonstration 3 30 P M Colonel L W Harrison *onorrhœa in Women*

IDAY—2 P M, clinical and pathological conference obstetrics and gynæcology) 2 30 P.M Mr Charles onald Acute Pyogenic Infections

ily, 10 A.M to 4 P M medical clinics surgical clinics and perations obstetrical and gynæcological clinics and operations

ORGE'S HOSPITAL S W 1

URSDAY—5 P M Dr Alfred Meyer psychiatric demonstration

PITAL FOR SICK CHILDREN, Great Ormond Street W C 1

URSDAY—2 P M Dr Wilfred Pearson Causes Symptoms and Treatment of Bronchiectasis 3 P M Dr W G Wyllie The Recognition and Treatment of Pulmonary Tubercle in Children

tpatient clinics daily at 10 A M and ward visits at 2 P.M

ISTOCK CLINIC Malet Place W C 1

NDAY—6 P M Dr Emanuel Miller Type Diagnosis

DNESDAY—3 P M Dr Cedric Shaw Sexual Difficulties 4 30 P M Dr H Crichton-Miller Frigidity

URSDAY—6 P M Dr Alice Hutchison Disorders of Childhood—Hysterical Manifestations Digestive Respiratory, and other Disorders

LOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole Street W 1

NDAY to SUNDAY—ST MARY'S HOSPITAL, W 2 Tues and Thurs 5 P M clinical and pathological M R C P course—BROMPTON HOSPITAL, S W 3 all day thoracic surgery course Mons and Thurs or Tues and Fri., 5 15 P M, M R C P course in chest diseases—LONDON CHEST HOSPITAL, Victoria Park E 2 Wed and Fri 6 P.M., M.R C P course in heart and lung diseases—CITY OF LONDON MATERNITY HOSPITAL, City Road E C 1, Sat and Sun course in obstetrics

SOUTH WEST LONDON POST GRADUATE ASSOCIATION

WEDNESDAY—4 P M Dr A E Tudor Hart Recent Experiences in the War in Spain

MANCHESTER ROYAL INFIRMARY

FRIDAY—4 15 P.M Dr C. S Don demonstration of medical cases

Births, Marriages and Deaths

BIRTHS

CUTHBERT—On May 27 at Newcastle, the wife of Dr Martin Cuthbert—a daughter

DARMADY—On May 24 at Britford Salisbury, the wife of Dr E M Darmady—a daughter

GIBBS.—On May 25 at Cobham Surrey the wife of Dr A J Gibbs—a son

HAMILTON TURNER—On May 25, the wife of Dr Claude Hamilton Turner, of Cadogan Place S W 1—a daughter

HICKS—On May 23, at Hove the wife of Dr Leighton Hicks—a son

HUBBARD—On May 13, at the Government Hospital Madras, the wife of Captain Philip A Hubbard I M S—a son

LLEWELLYN—On May 27 at Datchet the wife of Dr F E Llewellyn of Virginia Water—a daughter

TUKE—On May 26 the wife of Dr R G Tuke of Bournemouth—a son

WILDE—On May 21 in Dublin the wife of Dr J F Wilde, of Doughty Street W C 1—a son

MARRIAGES

BRAY—DESPREZ—On May 22 in Paris John Storey Barwick Bray M R C S to Elise Soulbieu Desprez

FLETCHER SHAW—STEVENSON—On May 24 at St Mary Abbots Kensington W Fletcher Shaw, F R C O G to Mabel Mary, widow of Archibald Campbell Stevenson M B

FRAZER—DICKINS—On May 20 at the Church of the Sacred Heart London Walter FitzGerald Frazer M R C S, to Kathleen Miriam Tavener Dickins

DEATHS

BARROW—On May 29 Albert Boyce Barrow M B Lond F R C S, aged 94

CAIRNEY—On May 23, at Queen Victoria Hospital Nice, Maud Christine Cairney M B Glasg D P H D T M & H

CLAPPERTON—On May 27, at Corby, Kettering Thomas James Milner Clapperton, L S A

COOKE TAYLOR—On May 24, at University College Hospital, London Charles Ralph Cooke Taylor O B E, M R C S of Chepstow, Monmouthshire aged [illegible]5

DAVIES—On May 30, Frederick Mark Davies, L R C P I of Rodney Court W 9, aged [illegible]

ELLIS—On May 27 Frederick William Ellis M D Aberd, F R C S of Birmingham

GILRUTH—On May 25, at Arbroath, James Davie Gilruth, M D Edin F R C P E of Drumkemno Carnoustie

PERDRAU—On May 29 at Guy's Hospital Jean René Perdrau M B Lond M R C S

SWINFORD EDWARDS—On May 29, at Grosvenor Street, W 1 Frederick Swinford Edwards F R C S aged 86

N B—*A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths*

THE LANCET 100 YEARS AGO

June 1, 1839, p 378

From a review of "Practical and Surgical Anatomy and Physiology" by W J Erasmus Wilson

On our first impressions much depends and he who commences the study of his anatomy with confused and ill-arranged ideas, let him not suppose that he has merely lost his first season, on the contrary he will painfully find in the second that Locke somewhat too boldly advanced his doctrine that the mind was a sheet of white paper or wax, if it have the one property of readily receiving impressions, it has another additional and sometimes very inconvenient one, that of retaining more or less clearly imprinted all that has once been traced

In fact to obliterate erroneous views or give clearness to ideas once confused are perhaps the most difficult tasks we ever have to perform infinitely more so than to acquire new matter, however abstruse or elabora-

NOTES, COMMENTS, AND ABSTRACTS

GROWTH OF CHILDREN IN DAY-SCHOOLS

By John Allan

Periodically those interested in the health and development of children are faced with certain questions which at present cannot be answered satisfactorily. They may be asked. What is the best length of term for children at day-schools or boarding-schools? Is the pressure of school work well adjusted to the needs of the children? Would alterations of routine be likely to modify the frequency or intensity of epidemics? Do the effects of boarding-school routine differ from those of day-school routine?

The present investigation was undertaken in an endeavour to obtain information which would enable definite answers to be given to such questions Boys attending two large secondary day-schools in the more prosperous suburbs of Leeds were measured at intervals of four weeks throughout the school year 1937–38. Measurements were obtained for 580 boys in one school and 430 boys in the other. As yet only a partial analysis has been made of the material collected, but it is already clear that it will not be possible to give unqualified answers to all the above questions

METHODS

The boys were measured for height and weight at the beginning of term and at intervals of four weeks thereafter. The measurements were t by gymnasium classes, at the same time of da each occasion, and cotton shorts were the clothing worn. The amounts gained by each were expressed as a percentage of his previous mea ment and the gains for each month averaged by groups The ages of the boys ranged fro to 18 years and at the beginning of the year the mean age for all boys at the larger s with which this article is principally conce was 13 years 4 months Unfortunately it was always possible to measure every boy throu the year, and there was consequently some fluct in the constitution and mean age of the popula measured each month. To eliminate the possi of variations of age-distribution and attend falsifying the results a separate group of boys, a 13½ plus or minus 5 months, was examined and t findings for this group were compared with t obtained for the whole population (figs 1 and The numbers in this special group were 75, 86, a 17 for the autumn, spring, and summer te respectively, and the composition of the group w constant for the duration of each term. The fig show that the rates of increase in weight (fig varied in a closely similar manner in both t limited group and in the whole measured popula

RESULTS

The records for both schools were in close agr ment throughout the year The rate of increase i height varied little during term time, only a s

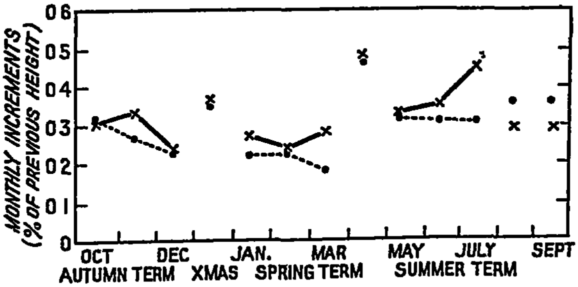

Fig 1—Average monthly height increments (expressed as percentages of previous height) of day-boys attending Leeds Secondary School 1937–38
x——x Boys aged 13½ years ±5 months; mean number 64.
• - - - - - Boys aged 8–18 years, mean age 13 years 9 months; mean number 344.
The points for August and September are half the total increment for the whole holiday period

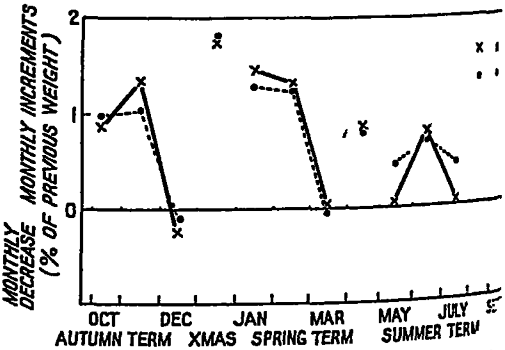

Fig. 2—Average monthly weight increments (express percentages of previous weight) of day-boys atten Leeds Secondary School 1937–38
x——x Boys aged 13½ years ±5 months, number 64.
• - - - - - Boys aged 8–18 years; mean age 13 y 9 months; mean number 344

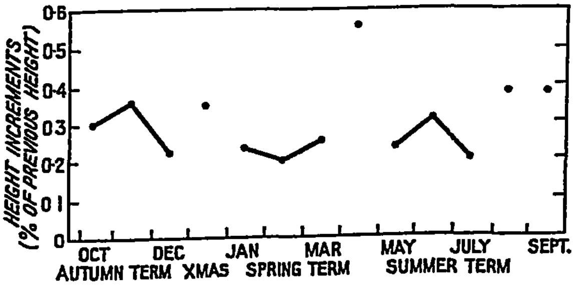

Fig. 3—Average monthly height increments (expressed as percentages of previous height) of boarding-school boys aged 13½ years ±5 months; mean number measured each month 66.

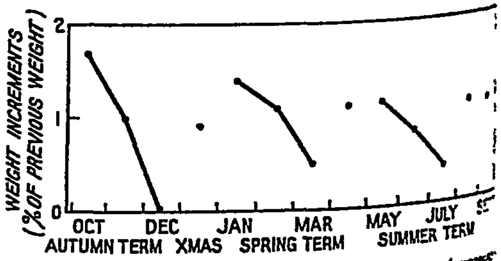

Fig. 4—Average monthly weight increments (exp as percentages of previous weight) of boarding boys aged 13½ years ±5 months; mean number each month 66.

eduction being noticeable towards the end of the wo winter terms In the holidays gains were more apid, particularly in the spring holidays Weight ncrements showed considerable fluctuations, and he reduction in the rate of increase at the end of erm was very remarkable The rates of gain in weight during the Christmas and summer holidays were higher than at any period of the three terms t should be emphasised that during the two winter erms the changes in the rates of growth are strikingly imilar to those found for children in boarding chools (figs 3 and 4) and previously described Allan 1937) A comparison of figs 1 and 3 shows hat the pattern of height increments for the 13½ year old group is identical in form during he autumn and spring terms both for day-boys and boarders The mean weight increments shown n figs 2 and 4 seem to indicate that the change o boarding-school environment after the holidays cts as a stimulus to weight production As a result he periods of most rapid gain occur during term me instead of during the holidays, in the case of this oarding school The contrast during the Christmas olidays is very obvious, the boys from day schools aining at nearly double the rate of those from the oarding school This may be caused by reaction fter the exceptionally long autumn term to which ay school children are subjected

ATTENDANCE AND SCHOLARSHIPS

A preliminary analysis of the attendance records hows that in the smaller school, both as regards cholars and others, attendance was much better han in the larger day school—a result which might ave been anticipated from the findings published a report of the Medical Research Council (1938) n each term there was a tendency for a greater umber of absences to be recorded during the last ve or six weeks than during the earlier weeks of the rm It was not surprising to find that the proportion of boys with perfect attendance was higher, every term, among scholarship holders than among he general population of the two schools. At the ge of 16½, however, the averages for height and eight for boys holding scholarships were 66 7 in nd 121 2 lb, that is, ½ in and 4 lb below the verages for those without scholarships Those king less than twenty minutes for the journey etween home and school had better attendance cords than those with longer journeys, but the ngth of the journey had no appreciable effect on e amount grown during a period of six months n the whole those walking to school from short istances, covered in less than twenty minutes had etter attendances than those who habitually cycled school, but the difference was not great

CONCLUSIONS

Both in day-schools and in boarding schools there a period at the end of every term when there is a duction in the number of boys who gain weight and the amount of weight gained Even those who ain weight in each month of the term do so more owly in the final month It would seem unlikely at this reduction in rate of gain is due to seasonal fluences and improbable that seasonal influences ould produce such sudden changes in the rate growth In this connexion the rates shown in 2 for November and December, February and arch and June and July should be compared

The rate of increase in height is not materially fected as the term progresses although some slight duction at the end is often perceptible During each holiday period there is an apparent acceleration in the rate of growth in height

With a relatively high rate of growth both in height and weight, the Christmas holidays, for day-boys, would seem to be a period of considerable metabolic activity at a time when climatic conditions may be regarded as unfavourable for growth Whether this physiological activity has any effect on the resistance to disease during the succeeding term, notorious for its epidemics, is unknown It is possible that a shortening of the autumn term or an increase in the duration of the half term holiday might enable children to begin the spring term with enhanced powers of resistance

The sudden decline in increase of weight that takes place during the final month of each term raises the question whether the pressure of school work and play is well adjusted to the needs of the children If it is conceded that the mental and physical stresses or the length and consequent monotony of the term are not well adjusted to their needs, it is possible that alterations of routine might have beneficial effects on the frequency and severity of epidemics

This investigation was carried out under the auspices of the department of physiology in the school of medicine at the University of Leeds, and with the *coöperation of the Leeds education committee, the* chief medical officer for schools, and the physical training staff of the schools concerned I wish to express my gratitude to all who assisted me in this work either directly or indirectly In particular my thanks are due to Prof Albert Hemingway for providing me with the facilities and assistance which made this work possible

REFERENCES

Allan J (1937) *Lancet*, 1 674
Medical Research Council (1938) *Spec. Rep Ser med Res Coun, Lond* No 227

TIME-BUDGETS

MANY people keep a more or less haphazard diary but the time consumed by each of the occupations recorded remains a matter for speculation Two American workers have tried to investigate the daily activities of a number of people from the point of view of kind, duration, frequency and motives To this end they persuaded some hundred persons to keep systematic records of all their activities for a month; the recording had to be done not only on the same day but if possible immediately a given activity was ended The record was called a time-budget[1] When all the data were in, the various activities were classified into eight categories those directly satisfying physiological and economic needs, social, *religious, intellectual, artistic activities*, love and courtship, and miscellaneous pleasurable activities Analysis of the records showed that by far the most time was expended on the activities subserving physiological and economic needs these account for 18 hours out of the 24 in the proportion of 11 to 7 The political, civic and general social activities take up only about 1¼ hours; this prompts the authors to reflections on the apparent indifference to the way in which the keepers of the budgets are governed; may it not favour the emergence of political minorities with dictatorial tendencies? The cultural activities —religious, intellectual and artistic—account for about 2 hours a day, but the details supplied suggest the overwhelming predominance here of wireless and newspaper which some would hardly admit to this category Amorous and pleasurable activities are said to have occupied 1¼ hours The fact that smoking is included in the last category casts further doubts on the classification; in heavy smokers it is likely to overlap many other activities.

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[1] Time Budgets of Human Behaviour By Pitirim A Sorokin and Clarence Q Berger London Humphrey Milford, Oxford University Press 1939 Pp 204 [illegible]

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AMALGAMATION OF LONDON THROAT HOSPITALS.—At a meeting of the committees of management of the Golden Square Throat, Nose, and Ear Hospital and the Central London Throat, Nose, and Ear Hospital last week it was unanimously decided to amalgamate the hospitals A new joint building will, it is understood, be erected in London

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ADDRESSES AND ORIGINAL ARTICLES

LEFT VENTRICULAR FAILURE*

By D Evan Bedford, M D Lond , F R C P
ICIAN WITH CHARGE OF OUTPATIENTS, TO THE MIDDLESEX HOSPITAL AND TO THE NATIONAL HOSPITAL FOR DISEASES OF THE HEART, LONDON

(*With Illustrations on Plate*)

NTIL recently the subject of left ventricular ure has received scant attention in this country, ely because of the dominant influence of kenzie's teaching, which led to general accept e of the so called "forward failure" theory kenzie's researches on abnormal cardiac rhythms rally concentrated his attention on heart failure ciated with auricular fibrillation, in which, as all later show, the two sides of the heart tend to together From this he came to visualise the rt as a single pump whose function was to transfer od from the venous to the arterial side of the ulation in quantities adequate for varying bodily uirements But in reality the heart comprises separate pumping units, right and left, between ch is interposed a vascular sponge in the form of gs, which, by virtue of their ready capacity to e up additional blood, play an important part in mutual adjustment of the two sides of the heart rmally these two pumps work in exact harmony, left ventricle quickly adapting its output to respond to the volume of blood delivered to it by right, which thus sets the pace The physio ical adjustments by which the two ventricles are ntained in equilibrium can be explained in terms Starling's law of the heart, formulated on the basis experiments with the heart lung preparation ilarly, Henderson and Prince (1913–14) have plained why the left ventricle does not outstrip right and so pump the lungs dry By placing more powerful ventricle in front of the lungs, ture has guarded against their being flooded under rmal conditions, but when, as happens in certain thological states, the left ventricle is overburdened, may fail to keep pace with the right, with the ult that blood accumulates behind it, in the lungs

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The modern conception of left-sided heart failure is *essentially* the same as that first enunciated by Hope, but it has been further developed in detail by experiments on animals and by direct measurements of circulation rates in man

In recent times valuable contributions to the pathological physiology of left sided failure have been made by American workers, especially by Harrison and his colleagues, by Blumgart (1931), and by Weiss and Robb (1933) I must also acknowledge my indebtedness to the comprehensive surveys of recent work on heart failure given in the monographs of Harrison (1935) and Fishberg (1937)

DEFINITION, INCIDENCE, AND ÆTIOLOGY

In clinical terms, left heart failure implies pulmonary engorgement behind a weakened left ventricle, without systemic venous congestion and its consequences and with a normal venous pressure Following Harrison, we may define it, in terms of cardiodynamics, as *a failure of the left ventricle to maintain a normal output in the presence of a normal filling pressure*

I have analysed a series of 154 cases of left ventricular failure comprising 132 cases in which pulmonary congestion was paroxysmal and 22 in which it was *persistent or terminal* All but 17 of this series were consecutive cases seen in practice Of these 154 cases 119 were men and 35 women giving a ratio of just over 3 males to 1 female which corresponds closely to the sex incidence of angina pectoris The ages ranged from 35 to 82, the average age at the onset of symptoms being 60½ years The maximal incidence was in the sixth and seventh decades

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Three common forms of heart disease predispose *to left ventricular failure*—namely, hypertension, coronary arteriosclerosis, and aortic disease—of these hypertension is predominant. Of 132 patients with paroxysmal dyspnœa 111 (84 per cent) had hypertension Angina pectoris or coronary thrombosis was present in 54 cases (41 per cent), of which 43 also had hypertension. Aortic disease was present in 21 cases (16 per cent); 18 of them had aortic incompetence and 3 aortic stenosis Aortic incompetence was syphilitic in 8 cases, rheumatic in 2, and due to hypertension or atheroma in 8 These figures are probably an underestimate of the rôle of syphilitic aortic disease, which would have been greater in a similar series of hospital cases In the non-paroxysmal group of 22 cases coronary thrombosis occurred in 18, hypertension in 12, and aortic incompetence in 1.

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* The Strickland Goodall memorial lecture delivered at the Apothecaries Hall March 29 1939

CLINICAL FEATURES

The dominant clinical manifestation of left ventricular failure is pulmonary congestion and œdema, and every grade of it may be observed from scanty basal crepitations to gross waterlogging of the lungs and hydrothorax. The symptoms vary in severity from nocturnal cough and slight wheezing to severe dyspnœa and asphyxia On clinical grounds it is customary to distinguish between acute pulmonary œdema and paroxysmal dyspnœa, often called cardiac asthma Analysis of the case-notes of 132 patients, all of whom I have interrogated and examined, has amply confirmed my impression that these two clinical syndromes cannot properly be separated, for they represent merely different degrees of pulmonary congestion Severe bronchial spasm is an inconstant feature of the attacks; hence the term "cardiac asthma" is not generally applicable. I propose, therefore, to group the clinical manifestations of left ventricular failure as follows: (1) paroxysmal pulmonary congestion, (2) pulmonary congestion of effort, and (3) chronic pulmonary congestion

(1) *Paroxysmal pulmonary congestion*—I shall first describe an average kind of attack and then mention the common variations

A man in the sixties, perhaps known to have hypertension or to be subject to anginal pain, becomes increasingly short-winded, yet by avoiding physical effort manages to lead a fairly normal life. Tired after a rather strenuous day, or perhaps after dining not wisely but too well, he retires to bed and to sleep, to be wakened in an hour or two with a feeling of anxiety and of oppression in the chest. He sits up, or even seeks the window, for more air; his heart is pounding, he starts to cough, and soon he is suffocating and fighting for breath.

Called from his bed, the doctor finds his patient a prey to distressing dyspnœa, anxious, sweating, pale, and perhaps slightly cyanosed The pulse is full and bounding, rate 120 or more, and *regular*. The blood-pressure is high, especially the diastolic. The breathing may be noisy, either from bronchial spasm or from bubbling bronchial sounds

The heart is enlarged to the left, and at the apex gallop rhythm is both palpable and audible. We shall also find signs of pulmonary hypertension, such as palpable systolic pulsation over the right ventricular conus and pulmonary artery, succeeded by a distinct shock as the pulmonary valves close.

The chest is hyper-resonant and emphysematous, bronchial spasm is likely, and there are basal crepitations The cough, at first unproductive, is now associated with a little frothy sputum, perhaps slightly bloodstained, and, if we examine the handkerchief which the patient invariably clasps, we shall note the characteristic "salmon spots"

The cervical veins are either invisible or fluctuating with respiration Examination of the legs and back reveals no trace of œdema, but, if the attack has been a long one, or if it is not the first, the liver edge may be palpable.

Morphine is given, and after an hour or so the patient is more comfortable, and we can leave him till the morning. Then we find him much better though still breathless on moving, and with a rather quick pulse-rate The blood-pressure has fallen somewhat, though the diastolic level remains high, and, in taking it, we now have time to notice a definite alternation of the pulse.

There may still be râles and rhonchi in the chest but in a few days' time, and after digitalis, the lungs become dry, and our patient is anxious to get about again.

Minor attacks of pulmonary congestion cause nocturnal orthopnœa and cough A patient may wake up once or more in the night with vague oppression in the chest, or with slight wheezing, quickly relieved by sitting upright, as often happens when those who use several pillows slip down in the bed during sleep Another, not troubled unduly during the day-time, is liable to fits of coughing as soon as he lies down at night, with the result that his sleep is much disturbed He may describe a curious tickling in the throat, due to laryngeal congestion or possibly of reflex origin

In more severe forms the feeling of oppression in the chest at the start is often intense and may amount to acute pain. Soon the whole chest is bubbling with fluid, and the patient becomes collapsed and cyanosed Profuse expectoration of pink frothy fluid is the rule, but there are exceptions and I have not infrequently seen a patient, with grossly waterlogged lungs and deeply cyanosed, expectorate little or nothing. This is the bronchoplegic form of attack described by Huchard—the *coup de sang pulmonaire.* In this condition of circulatory collapse combined with severe asphyxia a semi-comatose state may supervene, and whatever the blood-pressure at the start it quickly falls, and the pulse becomes small After these severe attacks pulmonary œdema may persist for days or weeks and a transient hydrothorax is not uncommon.

(2) *Pulmonary congestion of effort*—In some patients paroxysmal dyspnœa is provoked by effort or excitement during the day-time While hurrying, going uphill, or venturing out of doors from a warm room, they are pulled up suddenly by cough and dyspnœa which is not at once relieved by halting and continues until the chest is cleared by expectoration of bloodstained frothy sputum. Gallavardin (1933, 1934) in particular has drawn attention to this kind of pulmonary œdema, which occurs more commonly in patients with mitral stenosis, subject to paroxysmal dyspnœa or pulmonary hæmorrhage, than in left ventricular failure Effort œdema may be no more than a sudden aggravation of pre-existing pulmonary congestion, or it may occur in those whose lungs are usually dry Gallavardin also describes pulmonary œdema of effort in patients with angina pectoris and advanced coronary disease, at first they are pulled up by pain alone, but later, as the myocardium deteriorates, the effort pain is accompanied by dyspnœa and bloodstained expectoration

(3) *Chronic pulmonary congestion.*—After an attack of nocturnal dyspnœa the lungs may dry up quickly or, if they do not, right-sided failure may follow bringing some relief to the lungs There remains a group of cases in which pulmonary congestion persists without appreciable systemic engorgement and with a normal venous pressure In other patients chronic pulmonary congestion develops insidiously, without nocturnal paroxysms, and may persist for months or exceptionally for more than a year, without any

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signs of systemic congestion They may suffer from some degree of nocturnal orthopnœa and are liable to cough and hæmoptysis, but because of the absence of systemic œdema they are often thought to have bronchitis

The effect of treatment must be admitted Now that mercurial diuretics are regularly used in the treatment of pulmonary œdema, many patients are probably kept systemically dry who would otherwise become dropsical, hence in them left-sided failure is artificially maintained This is not necessarily so, for long ago Huchard described this chronic pulmonary œdema, persisting for months or years and often mistaken for bronchitis

PULMONARY MANIFESTATIONS

At the onset of paroxysmal dyspnœa, or in mild attacks, the lungs may be clear of added sounds Fine rhonchi and basal crepitations are commonly *combined*, but *sometimes bronchial spasm alone* is found, sometimes pulmonary œdema alone Acute emphysema may develop, with the result that the lungs are hyper resonant and distended and the heart is obscured This was first described by Huchard and has been especially noted by Weiss and Robb Hæmoptysis is common, not only in the paroxysms but also between them, and in several of my cases it has led to the diagnosis of tuberculosis or new growth, and even bronchoscopic examination has been requested This is the *hémobronchite* so well described by Huchard, of which I may cite the following example

A woman, aged 35, was sent to my outpatients for investigation as a suspected case of pulmonary tuberculosis For seven months she had suffered from cough and recurrent hæmoptysis, and a history of recent nocturnal dyspnœa was elicited

I found her blood-pressure to be 190/120 mm There were slight enlargement of the heart to the left, a gallop rhythm at the apex and an accentuated pulmonary second sound Both lung bases were congested, but there was no systemic œdema, nor were the neck veins filled

Radioscopy revealed pulmonary congestion and a heart so "mitralised" that I re-examined her to exclude mitral stenosis The electrocardiogram showed normal rhythm, left axis deviation, and inversion of T in lead I

With rest and treatment her lungs became dry and the cardiac dilatation diminished When she was last seen, as an outpatient, pulmonary œdema had reappeared, but there was no dropsy

Pulmonary congestion may involve the pleura, and hydrothorax is by no means rare, it is usually left sided (fig VI), or, if bilateral, larger on the left Hydrothorax is generally listed among the signs of systemic congestion and Fishberg (1937) states that he has never encountered it in isolated failure of the left heart My experience has been different, for after attacks of pulmonary œdema I have not infrequently observed hydrothorax in the absence of all signs of systemic congestion Hydrothorax may quickly subside with rest and treatment and will often be missed unless specially sought or unless radiography is promptly carried out In my 154 cases of left heart failure hydrothorax occurred in 38 (24 6 per cent), it was left sided in 18 cases, right sided in 9, and bilateral in 11 in 3 there was also an interlobar effusion (figs III, IV, and Va) In a third of these cases congestion remained confined to the lungs, and in all of them hydrothorax appeared to precede signs of systemic congestion

In this connexion I may mention the conclusions reached by Dr J L Lovibond (1938) from an investigation into the occurrence of hydrothorax, carried out at the Middlesex Hospital In 136 consecutive cases of hydrothorax encountered in my clinics the effusion was right-sided in 68, left-sided in 42, and bilateral in 26, these figures being based almost exclusively on radiological examination Certain complicating factors—e g, pulmonary infarction—have to be considered, but in general we showed that conditions of left ventricular stress and failure with regular rhythm favoured a left-sided effusion, whereas failure with fibrillation predisposed to a right sided effusion In hypertensive heart-failure, for instance, when the rhythm remained normal, left hydrothorax was twice as frequent as right, whereas, when fibrillation was present, right hydrothorax was three times as frequent as left

The pleural sacs have both a systemic and a pulmonary venous drainage, and somewhat ingenious theories have been adduced to explain hydrothorax in terms of systemic congestion—e g, by compression of the azygos vein Our investigations suggest that hydrothorax is a transudate from the visceral more than the parietal pleura, and that it indicates pulmonary rather than systemic congestion, though obviously it may result from a combination of both Interlobar hydrothorax, of which Lovibond's series contained 11 examples, can only be explained as a transudation from the visceral pleura and in terms of pulmonary congestion Lastly, in pure right sided heart failure—e g, in tricuspid valvular disease—hydrothorax is often lacking, even when ascites is considerable If we accept the occurrence of hydrothorax in isolated left heart failure, we must infer that it is a manifestation of pulmonary congestion

RADIOLOGY OF PULMONARY CONGESTION

In the early stages of left ventricular failure we may recognise pulmonary hypertension by an increase in size and density of the arterial shadows in the lung roots, which remain sharply defined. There may be prominence of the pulmonary trunk, with the result that the heart becomes "mitralised," though this belongs rather to the later stages Immediately after an attack of acute pulmonary œdema the large dense hilar shadows are surrounded by a foggy zone, and only the peripheral lung field remains clear (fig I) Pulmonary œdema starts at the lung roots and later gravitates to the bases fig II), hence radiological evidence of pulmonary congestion precedes the clinical signs The explanation of this localisation of pulmonary œdema is fully discussed by Zdansky (1929)

CARDIAC MANIFESTATIONS

Tachycardia is the rule often preceding the onset of dyspnœa and pulse rates of 120 or higher are common *Gallop rhythm* was noted in about half my cases and *pulsus alternans* in a third, both are commoner in hypertensive cases than in those with normal or low blood pressures At the onset of paroxysmal dyspnœa the blood pressure often rises (Amblard 1911, Gallavardin 1921 Pal 1905) and the diastolic pressure is disproportionately high This rise in pressure has been postulated as a cause of the attack, but more probably it is due to a reflex vasoconstriction and is the result rather than the cause of pulmonary congestion It is not constant, for paroxysmal dyspnœa occurs in patients whose pressure remains normal or low throughout In severe attacks of pulmonary œdema the pressure falls and the pulse becomes small

The cardiac rhythm is almost invariably regular apart from extrasystoles Paroxysmal auricular fibrillation occurred in some of my cases and in a few established fibrillation followed the attacks of dyspnœa, but I have not seen a single case in which the typical syndrome of paroxysmal dyspnœa started during the course of established fibrillation Any patient with fibrillation and chronic failure involving both sides of the heart may have his dyspnœa aggravated at night, especially by Cheyne-Stokes breathing. When such a case is treated, systemic congestion may be relieved without the lungs ever becoming dry, with the result that left heart-failure is artificially produced by treatment.

In my wards now is a man with high blood-pressure and fibrillation who was admitted with gross systemic congestion, but now his dropsy has disappeared with treatment, though he still has hydrothorax and œdema of the lungs; his venous pressure is normal, but his circulation-time from arm to tongue is much prolonged, indicating stasis in the lungs.

While in no sense denying the occasional coexistence of isolated left heart-failure and fibrillation, especially in cases under treatment, I do maintain that, in the natural course of events, fibrillation leads to simultaneous failure of both sides of the heart, and that true paroxysmal pulmonary congestion rarely occurs once fibrillation is established.

The electrocardiogram is almost invariably abnormal in left ventricular failure, in contrast to angina pectoris, in which the curves are normal in about 40 per cent. of cases. The commonest electrocardiographic pattern is left ventricular predominance combined with inversion of T in lead I or in leads I and II, and this was found in 41 per cent. of my cases in which cardiograms were taken Other abnormalities are common, and bundle-branch block occurred in 17 per cent of cases In only 2 was the electrocardiogram normal, both being cases of mitral stenosis, one with severe hypertension and the other with angina pectoris. Here, presumably, the right ventricular hypertrophy neutralised the left so far as the cardiogram was concerned

Relation to angina pectoris—Though Heberden clearly excluded dyspnœa from the clinical syndrome which he named angina pectoris, the two have been repeatedly confused Rougnon's famous patient, Captain Charles, probably had left ventricular failure with pulmonary œdema of effort rather than angina. Desportes (1811), on the title-page of his monograph on angina, added the phrase "almost always confused with asthma"; Osler (1897) included cardiac asthma in his lectures on angina pectoris; and Stokes remarked that most cases of angina pectoris could more properly be termed cardiac asthma. The inclusion, by French writers, of so-called "angina of decubitus" as a component part of left ventricular failure has carried this confusion yet further Left ventricular failure and angina pectoris are found in the same ætiological types of heart-disease—often in the same patient, when the dyspnœic usually succeeds the painful phase In coronary thrombosis pain and dyspnœa may occur simultaneously, and I have seen acute pulmonary œdema develop within a few hours of the onset of pain. Apart from coronary thrombosis, pulmonary œdema may follow any severe attack of angina pectoris, especially the nocturnal type and in syphilitic cases. I have already mentioned the painful oppression in the chest that may mark the onset of pulmonary œdema, but I have never regarded it as anginal Gallavardin (1933) refers to this oppression as "paradyspnœic angor" and distinguishes it from true anginal pain. Pratt (1926) well expresses the diagnostic difficulty when he says that an attack regarded as angina pectoris with dyspnœa by one observer might by another be called cardiac asthma with pain Although it is occasionally difficult to draw the line between angina pectoris and paradyspnœic pain, this is no reason to postulate acute dilatation of the left ventricle as the cause of angina pectoris.

MEASUREMENT OF CIRCULATION-RATE

Methods are now available for estimating the cardiac output, the velocity of blood flow in the pulmonary and systemic circuits, the vital capacity, and the volume of blood in the lungs The application of these methods to the study of heart failure has been exhaustively reviewed by Harrison (1935), Fishberg (1937), Blumgart (1931), and Weiss and Robb (1933), all of whom have made considerable contributions to our understanding of heart failure There is general agreement that the phenomena of left-sided failure cannot be explained in terms of diminished output, as required by the forward failure theory. Weiss and Robb (1933) have specially investigated the circulation in left ventricular failure, and their results may be summarised as follows The systemic circulation is little if at all affected, as proved by a normal or increased velocity of peripheral venous flow, a normal arteriovenous oxygen difference, and a normal venous pressure In the pulmonary circulation the presence of stasis is shown by a diminished velocity of blood flow, a reduced vital capacity, and an increased blood content of the lungs During a paroxysm of dyspnœa the cardiac output is usually unchanged or decreased but never increased, and, if pulmonary œdema becomes severe, the oxygen saturation of the arterial blood is lowered.

MEASUREMENTS OF CIRCULATION-RATES AND VENOUS PRESSURE IN A CASE OF RUPTURED AORTIC CUSP WITH ACUTE PULMONARY ŒDEMA

Circulation	Reading found	Normal reading
Arm-to-tongue (decholin) peripheral + pulmonary times ..	31 5 sec	10–17 sec
Arm-to-lung (ether) peripheral time	7 sec	4–8 sec.
Lung-to-tongue (decholin-ether) crude pulmonary time .. .	24·5 sec	4 5–10 sec.
Venous pressure	11 cm	4–10 cm.

Estimation of the circulation-time between arm and tongue can readily be done in the ward Using the Decholin method, I have found the arm to tongue time always increased in left-sided heart-failure, usually it is well above 20 sec. (normal 10–17 sec.). The arm-to-lung time is measured by injecting 5 minims of ether into an antecubital vein and timing its arrival at the lung, as judged by the patient's perception of its odour; the normal ether time is 4–8 sec. In the early stages of left-sided failure the ether time remains normal, but with greater pulmonary engorgement it may be prolonged. If we subtract the ether time (arm-to lung) from the decholin time (arm-to-tongue) we get an index of the pulmonary circulation-time (lung-to tongue), the normal being 4½–10 sec. In left ventricular failure this crude pulmonary circulation-time is always prolonged I have measured the venous pressure by the direct method and have often found it within normal limits in left heart-failure, though it may rise slightly after a severe attack of pulmonary congestion. The measurements (shown in the accompanying table) following from a case of acute pulmonary œdema rupture of an aortic cusp in a case of syphilitic aortitis are typical of left-sided failure.

PATHOGENESIS OF PAROXYSMAL DYSPNŒA

In terms of the so called forward failure theory congestion arises in front of a failing ventricle, the output of which is diminished, and paroxysmal dyspnœa is explained by a deficient blood supply to the brain. Recent investigations lend no support to this once widely accepted view. It now seems established beyond all question that pulmonary congestion takes place *behind* a failing left ventricle, and that it may be associated with a fairly normal cardiac output. This back pressure view is based on clinical, radiological, and experimental evidence, some of which I have cited, and which to my mind is conclusive. First there is hypertension in the lungs, which enables the inefficient left ventricle to maintain its output for a time; next there is stasis and œdema of the lung, against which obstacle the right ventricle struggles awhile, though eventually it yields, affording some relief to the congested lung. Following the ideas of Harrison, we may look on the stage of pulmonary hypertension as a compensatory adjustment by which the diastolic filling and hence the output of the left ventricle are maintained.

The subject of cardiac dyspnœa has been recently reviewed at length by Harrison (1935), Fishberg (1937), Christie (1938), McMichael (1938), and others, and they reject the view that dyspnœa is due to stimulation of the respiratory centre by qualitative changes in the arterial blood—e.g., acidosis and anoxæmia—confirming the conclusions reached by Fraser in 1927. Nor can dyspnœa be attributed to a deficient quantity of blood, in view of the fact that the cardiac output may remain fairly normal. According to the authorities cited, *cardiac dyspnœa* is due to a direct nervous reflex originating in the congested lungs and transmitted to the respiratory centre through the vagus. Congestion causes rigidity of the lung tissue, as first suggested by von Basch (1891), and Christie gives reasons for believing that diminished elasticity of the lungs initiates reflex dyspnœa.

Accepting pulmonary congestion as the basis of symptoms in left heart failure, we have yet to explain why it comes on in paroxysms and at night. The most obvious solution to our problem is a sudden disproportion between the two ventricles, and this might result either from an increased output of the right ventricle or from a diminished output of the left. Eppinger and his co-workers (1924) first postulated an increased output from the right heart, due to an increased venous return in cardiac asthma. Their measurements of cardiac output and of circulation rates have not been confirmed, yet from the clinical standpoint theirs is an attractive theory. The tachycardia, the pounding heart, and the unfilled veins suggest increased cardiac activity in which the left ventricle is outstripped by the right. Without accepting this view in toto, there is no doubt that, once a patient is awakened by pulmonary congestion, the venous return will be increased by muscular movements and struggling for air. The fact that paroxysmal dyspnœa ceases with the onset of right-sided failure points to the importance of a powerful and efficient right ventricle. When stress falls equally on both ventricles—e.g., in auricular fibrillation and in heart failure from thyrotoxicosis or anæmia—paroxysmal dyspnœa rarely if ever occurs.

Next we may consider the possibility of a sudden failure of the left ventricle. This happens in coronary thrombosis and in rupture of an aortic cusp, both of which may quickly provoke acute pulmonary œdema. In the case of coronary thrombosis this might always ensue, were it not for coincident shock and peripheral failure, by which the venous return is reduced. Though difficult to prove, some degree of acute dilatation of the left ventricle seems likely, and a hissing mitral regurgitant murmur is often heard during and after paroxysmal dyspnœa.

The question of auricular activity must also be considered. The acute pulmonary œdema of mitral stenosis does not develop when the left auricle is grossly dilated or is fibrillating. It is possible that a paralysed and dilated auricle, interposed between the right ventricle and the obstruction, functions as a cushion to the lungs. Since the pulmonary veins are destitute of valves, regurgitation backwards from an acutely dilated left heart may well be a factor in aggravating pulmonary engorgement.

Bouveret (1890) originated the theory of angioneurosis as the cause of acute pulmonary œdema. Huchard postulated a reflex stimulus from the aorta, and this idea has been revived by Wassermann (1926), who believes that cardiac asthma may be initiated by reflexes from the cardio arterial side of the circulation. In this connexion we must be careful to distinguish between cause and effect, for pulmonary œdema undoubtedly leads to autonomic *nervous reactions*.

Lastly, and perhaps most important, is the influence of a recumbent posture in precipitating nocturnal dyspnœa. Recumbency increases the blood content of the lungs and diminishes the vital capacity, thus aggravating pulmonary congestion. McMichael has shown that the normal increase in systemic output that follows change from the upright to the horizontal posture is lost in left sided failure. We may conceive pulmonary congestion, aggravated by posture, gradually increasing during sleep and passing the threshold that would normally excite cough and expectoration, till eventually sleep is broken and the explosion takes place. Harrison has emphasised the importance of cough in aggravating pulmonary congestion. To sum up, the essential condition for paroxysmal pulmonary congestion is a disproportion between the two ventricles. In different circumstances an increased output from the right ventricle, a sudden failure of the left ventricle, and the recumbent posture may all play some part in the causation of *nocturnal dyspnœa*.

COURSE AND PROGNOSIS

When pulmonary congestion is paroxysmal, prompt treatment may prevent or delay further paroxysms, but sooner or later they will recur, until eventually pulmonary congestion persists. Right sided failure may follow a single severe attack of pulmonary œdema or be delayed for months or years. As a rule, paroxysmal dyspnœa ceases with the onset of right sided failure or of auricular fibrillation but may return if systemic congestion is relieved by treatment. Not a few patients die suddenly, quite apart from the paroxysms, and others succumb to coronary thrombosis or to a cerebral vascular accident.

Of my 132 patients with paroxysmal dyspnœa or pulmonary œdema 96 have died, 3 untraced are probably dead, and 33 are still alive. In the 96 who have died the average duration of life after the onset of paroxysmal dyspnœa was 12.2 months; a third of these died within six months, over half within a year, and 85 per cent within two years. In 33 patients still living the average duration of life to date is 20.8 months; this figure is unduly influenced by 2 patients who have lived 13 and 10½ years. Palmer and White (1929) found that the average duration of life was 1·4 years in 170 patients with cardiac asthma who died, and 1·65 years in 80 patients still living. Weiss and Robb (1933) found a mortality of 50 per cent. in one year, and Pratt (1926) stated that most patients died within two years. These figures, which are in close agreement, indicate that the average expectation of life in paroxysmal dyspnœa is far shorter than in angina pectoris and slightly shorter than in coronary thrombosis. The prognosis in left ventricular failure is unquestionably influenced by treatment, and those live longest who receive prompt and adequate treatment at the start and continue under regular supervision.

DIAGNOSIS

Once it is appreciated that, in conditions of left ventricular strain, pulmonary congestion may be the first and only objective sign of heart-failure, diagnosis is rarely difficult. The onset of bronchitis or asthma for the first time in a man over 50 should at once suggest a careful scrutiny of the heart for evidence of hypertension, angina pectoris, and aortic disease. When, in such a case, cough and dyspnœa are mainly nocturnal, especially if there is orthopnœa or hæmoptysis, a cardiac origin is likely. Radiography is of great help, for it may disclose both cardiac enlargement and pulmonary congestion, and at the same time it permits the exclusion of intrathoracic neoplasm and chronic lung disease.

Occasionally there is real difficulty in distinguishing between bronchial and cardiac asthma; if so, estimation of the arm-to-tongue circulation-time by decholin will be decisive. In asthma and emphysema the arm-to-tongue time is normal or slightly shortened, but in paroxysmal cardiac dyspnœa it is always prolonged during or near the paroxysm. The electrocardiogram is rarely normal in left ventricular failure, and it may provide objective evidence of myocardial disease when clinical signs are lacking.

TREATMENT

Immediate treatment.—The first step should be directed towards diminishing the excitability of the respiratory centre, and for this purpose *morphine* has no equal. It should be given in every case without delay, in doses of gr ¼, by hypodermic injection. It is usual to administer atropine along with morphine, but I have never been able to satisfy myself that this combination is superior to morphine alone. Morphine is often withheld in the presence of cyanosis or collapse, but these symptoms should not contra-indicate its use. Huchard was opposed to giving morphine, influenced (it is said) by the death of Charcot from acute pulmonary œdema treated by morphine, yet the drug soon returned to general favour. Adrenaline should never be given, in my opinion, for it is as likely to do harm as good.

The next step in treatment is the relief of pulmonary congestion, which can most quickly be effected by *venesection*. Whenever there is gross œdema of the lungs or much cyanosis, venesection should be performed, 15–20 oz. of blood being removed. Venostasis has been recommended as an alternative to venesection and consists in the application of tourniquets or blood-pressure armlets to the proximal ends of the limbs to reduce the venous return to the right heart. I have seen this treatment carried out, and it appeared clumsy and ineffective compared with venesection.

In the average case of paroxysmal dyspnœa oxygen is not required and often causes unnecessary alarm to the patient. The indication for oxygen is cyanosis, and then oxygen should be administered continuously through the nose with a Marriott's nose-piece.

Later treatment.—As in all forms of heart failure, rest in bed is essential and must be of adequate duration. Bearing in mind the grave significance of paroxysmal dyspnœa, we should not let the patient up too soon, and I believe that at least a month's confinement to bed is not too long.

I am convinced that *digitalis* is of great value in paroxysmal dyspnœa, though it is difficult to concrete proof of this, because an acute cardiac emergency scarcely lends itself to critical tests of a single remedy.

The value of *diuretics* in pulmonary œdema insufficiently recognised. I first gave Salyrgan seven years ago, to a hypertensive patient who two weeks had been tortured by nocturnal dyspnœa yet had no trace of systemic œdema; the was dramatic, for, after a profuse diuresis, he peacefully at night for several months. diuretics are most effective in dehydrating the lungs, and it has been shown that the vital capacity is considerably increased within twenty-four hours of an injection (Alsever and Levine 1938). should be combined with the usual restriction fluid and salt intake.

Once nocturnal dyspnœa is relieved, morphine may be replaced by an opiate given by mouth e g, 20–30 drops of Nepenthe—and later still nightly dose of Luminal will suffice.

When the initial period of rest in bed is over patients with left ventricular failure require careful supervision and should lead a much less active life. The evening meal should be light, and a sedative

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LEGENDS TO ILLUSTRATIVE PLATE

DR. BEDFORD

I—Radiogram of acute pulmonary œdema after coronary thrombosis. Note perihilar transudation and right hydrothorax.

II—Acute pulmonary œdema in a case of syphilitic aortitis, free from systemic congestion.

III—Right interlobar and left basal hydrothorax in a case of syphilitic aortitis with paroxysmal dyspnœa.

IV—Pulmonary congestion with right interlobar and basal hydrothorax in a case of coronary thrombosis, free from systemic congestion.

V—Radiograms from a case of coronary occlusion, free from systemic congestion: (*a*) pulmonary congestion and right interlobar hydrothorax, (*b*) one month later after treatment with salyrgan.

VI—Radiograms from a case of hypertension with paroxysmal dyspnœa: (*a*) left hydrothorax and dilatation of right heart; (*b*) one month later, after treatment with salyrgan.

DR DORMER AND MR. COLLENDER

I–III—Miniature radiograms (for enlargements see figs. IV–VI).

IV—Enlargement of radiogram shown in fig. I. limited tuberculous infiltration of right apex and infraclavicular region.

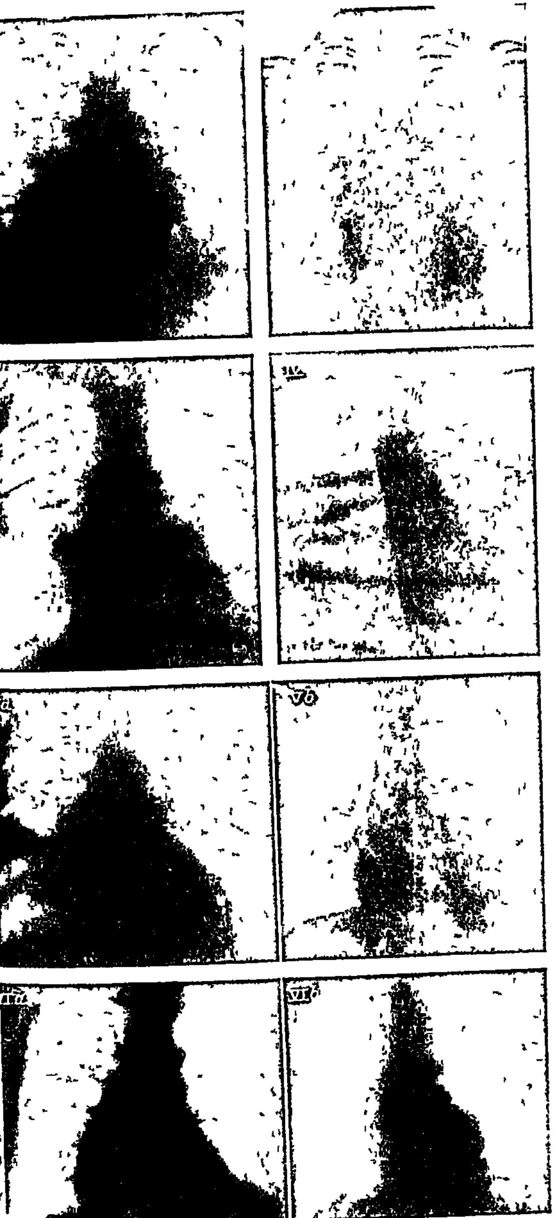
V—Enlargement of radiogram shown in fig II complete collapse (therapeutic) of right lung; left chest normal.

VI—Enlargement of radiogram shown in fig III advanced silicosis.

VII—Enlargement of miniature radiogram (not shown) of forearm.

OTTAWA CIVIC HOSPITAL

DR BEDFORD LEFT VENTRICULAR FAILURE

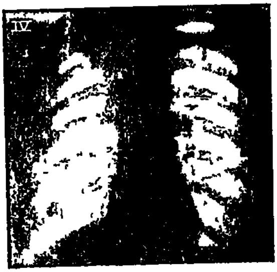


DR DORMER AND MR COLLENDER
MINIATURE RADIOGRAPHY

I

II

III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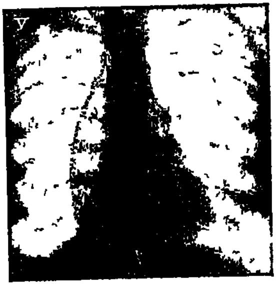
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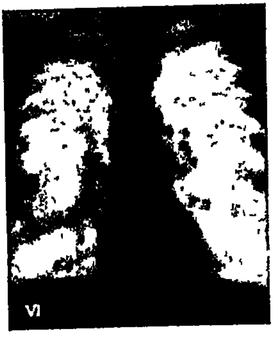
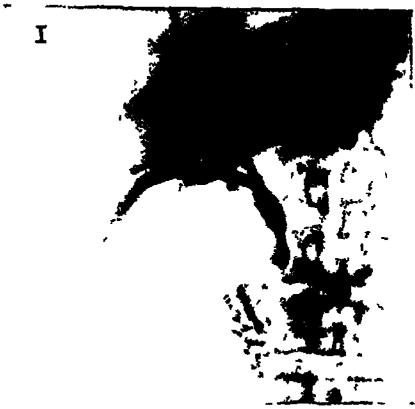

VI

VII

PROF PRIBRAM: ETHER TREATMENT OF GALL-STONES



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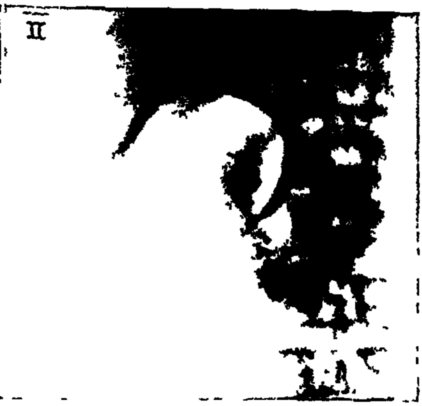

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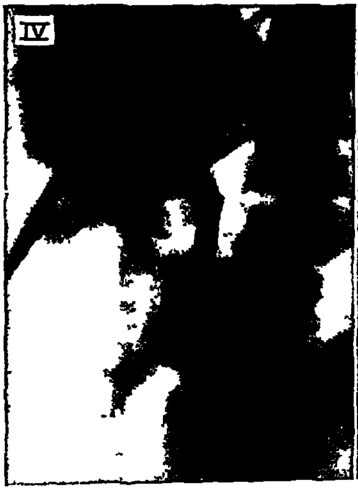
III



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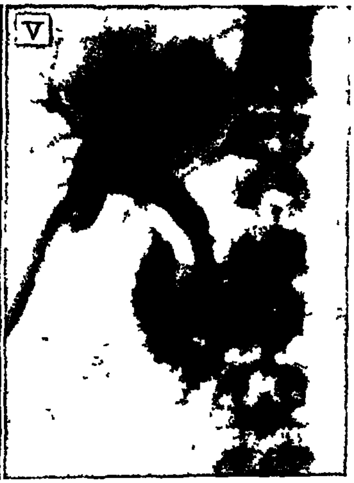
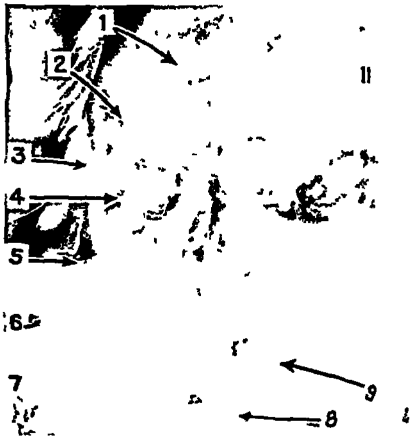
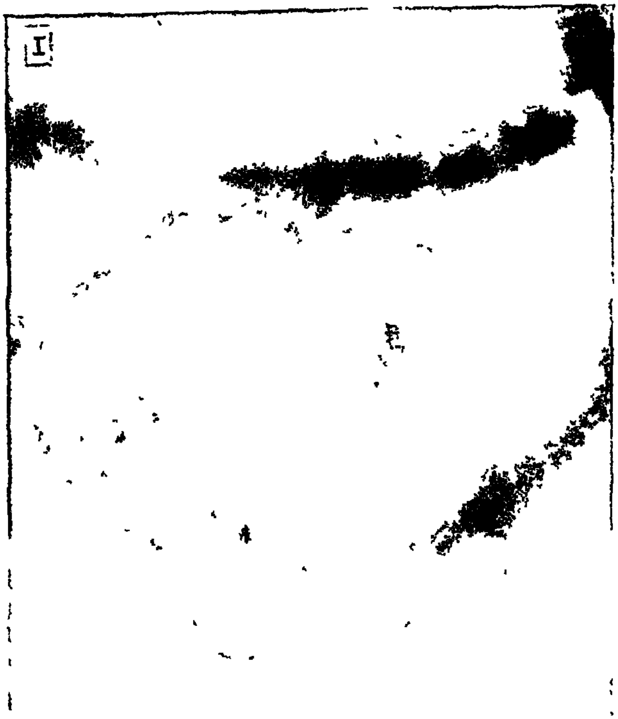


V

PROF. LIPSCHUTZ AND DR VARGAS EXPERIMENTAL TUMORIGENESIS (Fig 1)



DR GAINSBOROUGH. TREATMENT OF ULCERATIVE COLITIS



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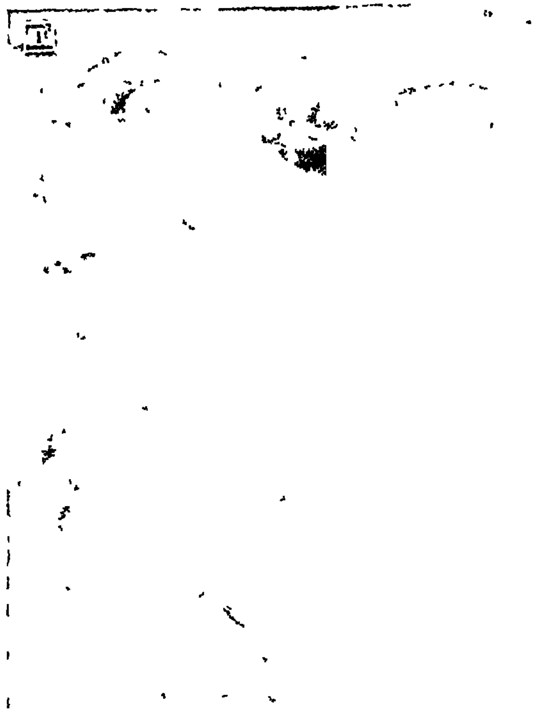

II

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ould always be available It is often wise to ontinue weekly injections of salyrgan for a time, at least to reinstitute them as soon as moist sounds ppear again at the lung bases A few days in bed nd a nightly opiate will often prevent the return of octurnal dyspnœa

CONCLUSION

In certain kinds of heart disease the left ventricle ils before the right, causing pulmonary and pleural ongestion without dropsy or systemic engorgement ntensification of this pulmonary congestion by the ecumbent posture or by effort may excite paroxysms f dyspnœa, known as cardiac asthma

The syndrome of left sided failure can best be xplained in terms of the back pressure theory first learly expressed by Hope and in accordance with the ardiodynamic laws established by Starling as the esult of physiological experiment

The recognition of isolated left heart failure is of ractical importance because pulmonary œdema equires prompt treatment by venesection, digitalis, nd diuretics, without waiting for the appearance of ropsy

In clinical teaching we must recognise that con estive heart failure may involve the systemic and ulmonary circuits separately or together, hence e may speak of failure with systemic congestion nd failure with pulmonary congestion—or simply f right sided and left sided heart failure

I must acknowledge the help I have received n the preparation of this lecture from Dr J L ovibond in connexion with hydrothorax and from r A. Willcox and Dr D H Davies in respect of easurement of circulation rates I am also grateful o Dr Graham Hodgson for many radiograms and o Dr G E S Ward for his generous coöperation

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MINIATURE RADIOGRAPHY

By B A Dormer, M D Durh, D P H, T D D
MEDICAL SUPERINTENDENT OF THE KING GEORGE V JUBILEE HOSPITAL FOR TUBERCULOSIS, DURBAN AND

K G Collender, M (S A) I E E

(*With Illustrations on Plate*)

Miniature radiography is photography of a still image produced with X rays on a fluorescent screen The image is photographed through a light proof space with a camera having a large aperture lens

Original research into this method was started in South Africa by one of us (Collender) in 1927 at the Witwatersrand Native Labour Association's X ray department Research work along similar lines has been carried on independently in South America, Germany, and Japan For many years Collender found it impossible to obtain a camera with a sufficiently large aperture, he also found that fluorescent screens and photographic films were not only too coarse in grain but also too slow, the results in those days being definition insufficient to be of diagnostic value Finally, after long correspondence with Collender, Messrs Zeiss produced a camera with a Biota lens of considerable aperture (f 0 85, focal length 8 5 cm) This lens is believed to be the largest of its type in the world Messrs Ilford have prepared for him a special fluorescent screen of the required fineness of grain by the West process The film now used is almost grainless and has an H and D number of 9800 For this film an exceptionally fine grain developer has to be used

Impetus was given to this work by a desire to produce radiograms of large groups, possibly containing infectious chest cases, economically and rapidly It will be possible for 2000 or more persons a day to be radiographed by this process with a suitable plant We are assured that the results now

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LEGENDS TO ILLUSTRATIVE PLATE

PROF PRIBRAM

I—Radiogram, after lipiodol, showing gall-stone lying over the duodenal papilla

II—Gall-stones dissolved after a fortnight's treatment with ether Remaining pulp passed into the duodenum

III—Drain introduced through the papilla into the duodenum

IV—*Gall-stones over the papilla*

V—Papilla freed after four weeks' treatment

PROF LIPSCHUTZ AND DR VARGAS

I—Abdominal viscera of a castrated female guineapig after a course of subcutaneous injections of 80 µg of œstradiol benzoate thrice weekly for six months Note enormous uterus with subserous, pedunculated and mesometrial fibromyomas Arrows 1, 2 3 5, and 6 indicate fibromyomas of abdominal wall arrow 4 a big apical tumour of the right uterine horn, arrows 7, 8, and 9 uterine tumours, and arrows 10 and 11 mesenteric tumours

DR GAINSBOROUGH

I—Radiogram, after opaque enema showing disorganisation of mucosa of the whole of the large intestine in ulcerative colitis of three months duration in a woman aged 55 (case 2)

II—Same case as fig I 2½ months later after 12 days' treatment with cod liver oil retention enemata showing improvement mainly noticeable in the rectum and sigmoid, the edges of the shadow being sharp and clear.

achieved are of diagnostic value in early pulmonary tuberculosis and in silicosis.

DEVELOPMENT OF TECHNIQUE

In the original experiments the position of the camera relative to the fluorescent screen was determined by the use of a grid of microscopic indian-ink lines on white paper in place of the fluorescent screen, and an oil-polished ground glass in place of the photographic film as a focusing device. It was found, however, that, when a lens of very large aperture and a screen emitting monochromatic light were used, the focus for that colour was displaced from the mean focus for the grid lines Hence the true focus for the screen had to be obtained by trial and error, the colour of the fluorescent light being determined by the nature of the salt used.

It was necessary to obtain a camera lens not only corrected for aberration but also producing an image of optimal size for the work required This optimal size is at present 24 mm square, the 10 mm square field produced by an earlier camera of the same aperture with focal length 5 cm giving insufficient detail for diagnostic purposes.

TECHNIQUE

In ordinary radiography intensifying fluorescent screens are placed on either side of a double-coated X-ray film with their sensitive sides inwards. The intensifying screens, by their fluorescent property, light up under the action of the X rays and emit a light which is extremely photo-active. About nine-tenths of the exposure of the film is caused by the fluorescent light and about a tenth by direct X-radiation. Therefore, the resulting fineness of detail depends strictly on the grain of the fluorescent salt constituting the screen If a sufficiently fine-grained fluorescent screen with adequate illumination is obtained the problem becomes purely photographic The photographic problems have now been solved by the use of the special Zeiss lens and excellent fine-grain films and developers now procurable The image on the fluorescent screen is necessarily dim from a photographic point of view; hence the large aperture that is required, which is extremely costly to produce

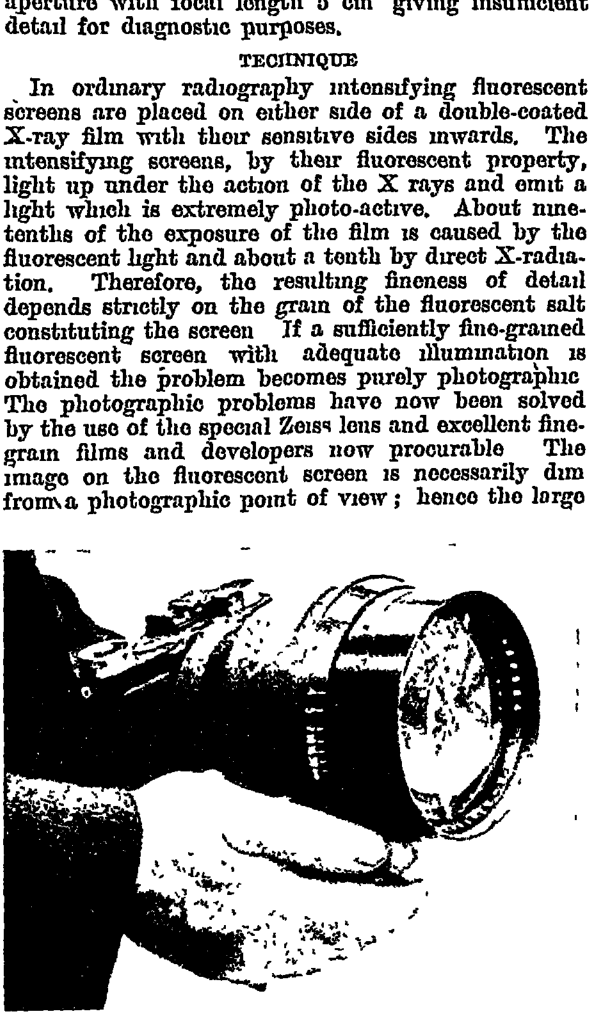

FIG. VIII—Camera used for miniature radiography.

Methods in which cheaper lenses of smaller aperture are used will necessarily compare very unfavourably with the results produced by Collender's method, especially in regard to the time-factor, which is of paramount importance in chest technique The X-ray technique used in miniature radiography must be such that very short exposures, not more than 1/20 sec, are used, and to compensate for this and to allow reasonably low penetration to be used 300 mA tube current or higher is recommended. With this technique and about 5 ft. focus screen distance a penetration of about 60 K.V.P. might be used. To obtain first-class results these four prime factors must be carefully controlled. In plants required to take many miniature radiograms a day suitable cooling and energy dissipation must be allowed for. For this work a large rotating anode tube, preferably immersed in circulating oil, is essential All electrical parts should be designed for heavy duty, and the protection throughout should be adequate. The best plant for this work is probably either a condenser discharge plant or one with four-valve rectification. With the methods at present in use—e g, with 12 × 15 in. films—one operator with one plant, doing his own developing, can produce a maximum of about 50 radiograms a day. With miniature radiography a spool of 72 or more miniature radiograms can be developed in a few ounces of solution The process is, therefore, economical in all its aspects, the cost of production being about a twentieth of that of large films.

FIG IX—Miniature radiography apparatus in action.

COMPARISON OF RESULTS

In photographic reduction detail is always gained, whereas in photographic enlargement it is partially lost, particularly when a positive enlargement is made on a bromide paper of any quality, the detail thus lost being clearly seen through a magnifier or projector. Figs. IV–VII on plate represent positive enlargements on bromide paper The original miniatures were mounted in Kodaslides, and it is found that they are of sufficient clarity to be read held up to a viewing-box, or, if desired, a magnifier may be used. In a projection lantern even a 12 × 15 in enlargement gives adequate detail on a pale green background In the final tests reductions from 12 × 15 in. films (1/15) and enlargements from miniatures (× 15) of the same patients were compared, both being positives on bromide paper In spite of the gain of detail by reducing the 12 × 15 in. film and the loss of detail by enlarging the miniature, the results were comparable.

CLINICAL APPLICATION

The method is particularly applicable to surveys of groups of persons—e g, army recruits, school children, university students, native locations and mine compounds and reserves. It is rapid and inexpensive and will sieve the abnormal from the normal chest. As a clinical accessory it makes the investigation of contacts and suspects in tuberculosis work an economical matter. As a permanent record of progress in artificial pneumothorax and other forms of collapse therapy it will be of considerable value. Other applications, such as fracture control and bismuth-meal recording, will no doubt be evolved as the method becomes known.

Figs I–III on plate illustrate the miniature radiograms and figs IV–VII enlargements made from them. Fig VIII in the text shows the camera and fig IX the apparatus in action. The radiograms shown in figs I, II, and VII were made with a condenser discharge plant at 4 ft 6 in, 0 03 sec, 350 mA, 26 K V.P, and fig III with a four valve plant.

SUMMARY

By using a camera with an exceptionally large aperture miniature photographs can be taken of radiographic images on a fluorescent screen of very fine grain, the necessary exposure being not more than 1/20 sec. In this way radiographic appearances can be rapidly and cheaply recorded and large groups of persons can be examined within a short time.

ETHER TREATMENT OF GALL-STONES IMPACTED IN THE COMMON DUCT *

By B O C Pribram, M D Berlin, L R C P E
LATE PROFESSOR OF SURGERY IN THE UNIVERSITY OF BERLIN

(*With Illustrations on Plate*)

The injection of ether into the common duct so as to dissolve gall stones that cannot be removed through a simple supraduodenal incision (Pribram 1932) has found favour with surgeons in many countries, and I am asked by colleagues to outline my experience of it and give more details of the technique.

The operation risk of surgical removal of stones impacted in the ampulla of Vater is very high, partly because the patients are usually suffering from cholæmia, septicæmia or hepatic insufficiency. The fatality rate ranges from 20 per cent to 40 per cent or more (according to different statistics). Nor is the operation necessarily successful, for if any stones are overlooked they may give rise to further trouble. Our two aims therefore should be to reduce the operation risk and make sure that every stone is removed.

My first attempt to dissolve stones remaining in the common bile duct after operation was made in the following rather desperate case —

A man, aged 68, had had gall stones for many years, and a fresh attack had been followed by jaundice lasting several weeks. His general state was deteriorating, and he was having chills and rigors. Signs of acute pancreatitis appeared.

The diagnosis was confirmed at operation. The badly inflamed inner coats of the gall bladder were quickly electrocoagulated (mucoclasis). A supraduodenal opening was made into the common duct, and many stones were extracted, but it was impossible to empty the ampulla completely through this incision. Further manipulation by the retroduodenal or the transduodenal route would have been risky especially in the presence of acute pancreatitis, and I did nothing more than introduce a small drain into the common duct. The drain reached the stones, and the common duct was tightly sewn round it my idea being that, if the patient survived, I would try to dissolve or soften the stones by injecting suitable solvents through the drain. The operation was thus performed very quickly, and the recovery of the patient was so satisfactory that on the fifth day we could begin our experiment.

In the hope of dissolving the cholesterol that forms the nucleus of the stones, we injected a few drops of ether through the drain several times daily. This procedure was followed by injection of a small quantity of liquid paraffin to facilitate the passage of the softened stones through the papilla. The course of the treatment was followed radiographically by injecting Lipiodol. The first radiogram (fig I on plate) showed the stone lying over the papilla, while the small amount of lipiodol was already passing into the duodenum. After a fortnight's ether treatment a cholangiogram showed that the stones were already partly dissolved and that the remaining pulp had passed into the duodenum (fig II). It was relatively easy, as the next radiogram (fig III) showed, to introduce the drain through the papilla into the duodenum.

Since then I have applied the ether method in further 37 cases of gall stones impacted in the papilla and, as confirmed by cholangiography, I have in all cases surviving the operation (38 out of 40)† succeeded in emptying the papilla. A further example is shown in figs IV and V. This conservative treatment has proved a real advance in lowering the operation risk and improving the results. The fatality-rate in these serious cases has dropped from 20 to 5 per cent. By routine radiography after injection of lipiodol into the bile duct we can make certain that no stones are left and that the whole bile duct system is clear. This certainty we never had before, and its importance is shown by the observation at Kirschner's clinic that in half the cases with recurrent trouble after operation the cause is stones left behind (*Chirurg*, 1938). In a case recently treated in my clinic the very experienced assistant who performed the operation was perfectly satisfied that no stone had been left, but the cholangiographic control showed three small stones in the common duct. They had been overlooked in spite of all the care taken. Here too the ether method proved a complete success.

I believe, therefore, that postoperative radiography is desirable in almost all cases where stones are found in the common duct, and I have made it a routine since 1932. Mirizzi of Cordoba, Argentina, goes further and advocates radiography on the operating table. No doubt this can be very helpful in some cases, but I cannot help feeling however that there are objections to this method as a routine. First, it prolongs the operation. Each radiogram, even when all is perfectly organised, requires at least ten minutes and this is a long time for a patient whose condition makes speedy operation necessary, and for whom it is usually advisable to avoid even general anæsthesia since the liver is badly damaged. Further, a single radiogram does not always provide convincing or reliable evidence about the state of the papilla or of the common duct. Personally I am never satisfied with only one radiogram and sometimes take two or three, changing the position of the patient and the diameter. Spasm sometimes simulates total obstruction by stones, in a series of radiograms I observed such a spasm lasting 40 minutes. It was possible to relax it by an intravenous injection of atropine, but how could one deal with such a case on the operating table? On the other hand, bile can flow into the duodenum when the stone has slipped into the upper part of the hepatic duct, which is not always distinct in a single radiogram. Now that the ether method is available for postoperative removal of stones there is no longer the same urgent need to make sure during the operation that no stone has been left.

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* A lecture delivered at the British Postgraduate Medical School, Hammersmith, December 1938.

† Two patients with advanced cholæmia died six and [illegible] days after operation before the ether treatment could be started.

TECHNIQUE

A surgeon should always bear in mind that the ether method is a conservative form of treatment, and that the time required for dissolving stones and emptying the papilla varies considerably. In some cases we needed a few days, and in others as long as eight weeks.

For example, at operation on a man, aged 64, an absolutely impermeable papilla was found, and it could not be emptied even after six weeks of ether treatment. I was already considering a new operation with a transduodenal opening. Owing to the tenacity of the obstruction and the unusual failure of the ether treatment, I even suspected a carcinoma of the papilla. Fortunately I had to postpone the operation for another week and continued the ether treatment. The next cholangiogram, taken a week later, showed that the ampulla was now empty. I followed up this patient five years. He remained in perfectly good health and had no further trouble.

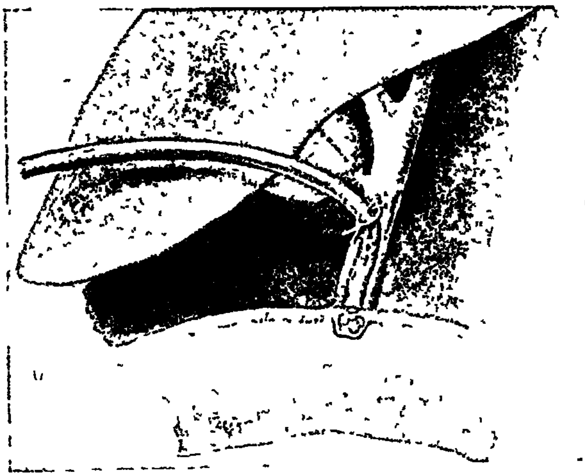

FIG VI—Method of introducing the drain through the opening in the common duct and passing it as far as the stones in the ampulla of Vater. The opening in the common duct is sewn so as to be water-tight round the drain, which is held in place by binding the catgut sutures round it.

It is important therefore not to become discouraged, even if after a treatment lasting several weeks the cholangiogram shows that the ampulla has not yet been entirely emptied The time required for dissolving the stones or transforming them into a pulp that will pass through the papilla depends on many factors I have sometimes seen stones hidden in inflamed and swollen crypts, and such a situation will delay their dissolution, but the fact that we have finally met with success in all 38 cases, including some with obstinate biliary fistulas, and that since 1932 we have not had to perform any operations such as retroduodenal or transduodenal choledochotomy makes me confident that we can rely on the method, and I think we should consider a second operation only after long and thorough ether-treatment has failed. The following technical details may be of value

(1) The drain is introduced through the opening in the common duct right down to the stones, care being taken that it shall not kink. The opening in the common duct is sewn so as to be water-tight round the drain, which is held in place by binding the catgut sutures round it. The drain should not be too large, so that there may be ample room in the common duct for the bile from the hepatic duct to flow alongside the drain (fig. VI).

(2) The hepatoduodenal ligament is also sewn round the drain to carry out an exact peritonisation of the operation field. Water-tightness is useful for the distinctness of the cholangiogram Other drainage is seldom necessary, but there is no harm in introducing a safety drain for forty-eight hours

(3) I generally perform the first cholangiography on the sixth or seventh day after the operation The first washing out with ether is done when the lipiodol has flowed out through the drain. This usually takes place within a few hours.

(4) One must remember that ether boils at body temperature; hence the evaporating ether causes some pressure in the common duct, which the patient may feel in the epigastrium The amount of ether to be used depends entirely on the width of the common duct; in an enlarged duct 0·5 c cm or even 1 0 c cm can easily be injected, whereas a small duct may take only a few drops The bile is first sucked out of the drain with a syringe so as to empty the duct as far as possible The syringe is then filled with ether, which is carefully injected, drop by drop, the patient being told to say when he feels any pressure. When he gives the signal the contents are sucked up again, and the pressure immediately ceases to be felt The injection can then be repeated in the same way several times, so that a real lavage is performed Finally 1–2 c cm. of liquid paraffin is injected, and the drain is closed with a clamp. The patient is told to leave the clamp on as long as possible and only to remove it when he again feels pressure. In some cases adrenaline and atropine or a 0 5 per cent solution of procaine, can be added to facilitate relaxation of the sphincter of Oddi. This procedure may be repeated twice or three a day according to the particular case An injection of 50 c.cm. of a 33 per cent solution of magnesium sulphate can also be made, through a duodenal tube, once or twice a week

The time that the patient can stand the occlusion of the drain sometimes increases very rapidly, the papilla becoming more and more permeable. After a week's treatment a new cholangiogram is taken. The patient can leave the hospital after two or three weeks and may be treated as an outpatient or, if necessary, at home The drain is removed when the cholangiogram shows that the whole common duct and the papilla are empty. The small fistula will then always close in forty-eight hours.

BILIARY FISTULA

I have had to treat several patients with biliary fistula in whom stones in the common duct had apparently been overlooked in spite of careful examination when operating The general state of such patients has sometimes been poor. They are dehydrated because of the loss of fluid through the biliary fistula, and the appetite and digestion are disturbed The condition sometimes deteriorates very rapidly, but a surgeon cannot lightly advise a second operation soon after the first and would rather not abandon hope that the stones will eventually pass through the papilla spontaneously. Further, there can be no doubt that the risk attached to a second operation is considerable Here the ether method offers a possibility of safe treatment, and so far it has never failed me in a case of this kind. Cholangiography is first performed to make sure of the cause of obstruction, and the ether method is then used in the manner described It has always been quite easy to introduce a rubber drain into the fistula, and the drain finds its way down into the common duct, where the stones are In one case, in which the biliary fistula had persisted 3½ months, the papilla was emptied by a week's treatment, and the fistula closed two days after the removal of the drain

RECURRENCE AFTER ETHER TREATMENT

So far as I could follow up the 38 patients treated with ether, only one had a recurrence of gall-stone

The patient, a man aged 43, had jaundice in 1918 for the first time, and afterwards often a feeling of pressure in the upper abdomen Six months before seeing me he developed pains in the upper abdomen Cholecystography showed no filling of the gall bladder, but no special treatment was undertaken Later colic set in again, followed by jaundice On admission to the clinic he was very ill, with severe jaundice and multiple cholæmic subcutaneous hæmorrhages, any pressure on the skin produced bruising The circulation was bad, and he had high fever with frequent rigors The urobilinogen test gave green instead of red, which I have always found to be a sign of a greatly damaged liver

Operation was performed on Dec 9, 1935 The liver was enlarged and friable and the gall-bladder badly inflamed, containing purulent mucus and small stones After electrocoagulation (mucoclasis) the common duct was incised, and abundant mucus and stones were removed The stones reached high up into the hepatic ducts They were removed as far as possible, and the operation was quickly finished because the condition of the patient had become very bad A rubber tube was introduced into the common duct and sewn water-tight, and the abdominal wound was closed After the operation glucose and calcium were injected by intravenous drip, Parathormone was administered, and gelatin injected Prontosil and cardiac stimulants were also given

The patient gradually improved, and on the twelfth day after operation ether treatment was started He again had rigors, with rises in temperature, several times The wound had to be handled very carefully, because any movement of the drain caused immediate bleeding The appearance of the bile gradually improved and eventually it became brown and clear There was never any serious hæmorrhage The patient had fever and rigors several times until Jan 11, 1936 The treatment was controlled by repeated cholangiography On March 6 cholangiography proved that the papilla in the common duct was entirely free On March 8 he was discharged from the clinic in a good condition, but the liver remained enlarged, apparently owing to cirrhosis

Between 1936 and 1938 his health remained good, but in 1938 he was again ill and, so far as I can ascertain, was operated on somewhere else for a recurrence of gall stones It is not quite clear whether some stones remained in the intrahepatic duct and later descended causing a new occlusion of the papilla or whether new stones were formed in the liver I have been unable to obtain particulars of the second operation

SUMMARY

In almost all cases of multiple stones in the common duct it is advisable after operation to make certain that the duct has in fact been completely emptied This can be done by injection of lipiodol followed by radiography At operation a small drain with a lateral opening at one end is introduced into the common duct and passed downwards to the papilla Sutures round the incision should render it water tight Cholangiography is performed 6–10 days later, according to the condition of the patient

If it is found that stones have been left in the common duct an attempt should be made to remove them by instillation of ether The ether dissolves the cholesterol kernel and liquid paraffin helps to transform the stones into a soft pulp that can easily pass through the papilla of Vater I have found the method successful in all the 38 cases in which I have tried it

This use of ether enables us to avoid complicated operations, such as retroduodenal or transduodenal choledochotomy It has also proved very satisfactory in dealing with biliary fistulas due to overlooked stones in the common duct

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EXPERIMENTAL TUMORIGENESIS
WITH SUBCUTANEOUS TABLETS OF ŒSTRADIOL

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LUIS VARGAS, JUN, M D
ASSISTANT IN THE DEPARTMENT

(With Illustration on Plate)

UTERINE and extra uterine fibromyomas can be produced when follicular hormones are repeatedly injected into female guineapigs (Nelson 1939, Lipschütz and Iglesias 1938, Iglesias 1938, Vargas and Lipschütz 1938, Moricard and Cauchoix 1938) The uterine tumours can be found most frequently on the surface of the uterus (subserous fibroids) but also in the myometrium and, though most rarely, in the submucosa Subserous tumours are to be found also in the vagina, in the mesometrium and mesosalpinx, in the mesentery, in the epiploön, on the greater and lesser curvatures of the stomach, on the spleen, pancreas, and liver, in the hilum of the spleen and the kidney, on the bladder, on the diaphragm and on the abdominal wall We never found tumours in the thoracic cavity The tumours vary greatly in site, number, and size, but we showed that, with 80 μg of œstradiol benzoate injected subcutaneously thrice weekly for two or three months, it was very rare for a castrated guineapig not to develop tumours With smaller doses also, down to 5 μg per injection, tumorigenesis can be produced, but the tumours are smaller and develop less constantly (Jedlicka and Bellolio) Several examples of tumours produced in similar experiments are illustrated in figs I–VIII

The terms "tumorigenesis" and "tumorigenic" are used instead of "carcinogenesis" and "carcinogenic" because the tumours so far produced experimentally in this way are not only benign but also are incapable of autonomous growth and regress when the treatment is discontinued

Since these tumours, under certain quantitative conditions can be produced in 100 per cent of cases, we were able to make an extensive study of the external and internal conditions of this form of tumorigenesis.* Tumours were produced in 260 guineapigs, some animals being under observation for twelve months The different esters of œstradiol —benzoate, dipropionate, butyrate-benzoate, caprylate—all revealed a more intense tumorigenic action than the free hormones—œstradiol and œstrone (Lipschütz and Vargas 1939a). There are also important differences between œstradiol and œstrone (Lipschütz, Rodríguez, and Vargas 1939), and between œstradiol and stilbœstrol (Lipschütz and Vargas 1939a) We have shown that the ovary exerts an inhibitory action against the tumorigenic influence of the follicular hormones. Though tumorigenesis can be provoked in both the normal and the castrated female, the tumours develop in general more constantly and are bigger in the castrated animal (Lipschütz and Vargas 1939b). The difference between the tumorigenesis in normal and castrated guineapigs is statistically significant (Lipschütz, Murillo, Vargas, and Koref 1939). The influence of the uterus and of the spleen on tumorigenesis is now being studied in this laboratory. Similar tumours can be produced also in the male guineapig, but there is a highly pronounced sexual specificity as to the tumoral reaction (Koref, Lipschütz, and Vargas 1939, Jedlicky, Lipschütz, and Vargas 1939). This specificity does not depend on the presence of the testicle; nor have we yet been able to inhibit the development of these experimental tumours in the female by simultaneous injection of propionate of testosterone.

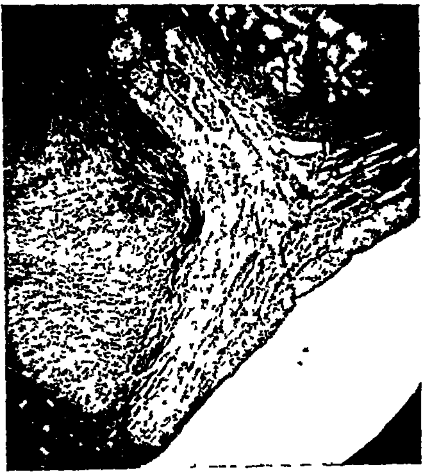

FIG. II—Subserous fibromyoma of uterus in a castrated guineapig after a course of subcutaneous injections of 40 µg. of œstradiol benzoate thrice weekly for four months External or longitudinal muscular coat is displaced by the tumour, without any sharp boundary between them. (× 10)

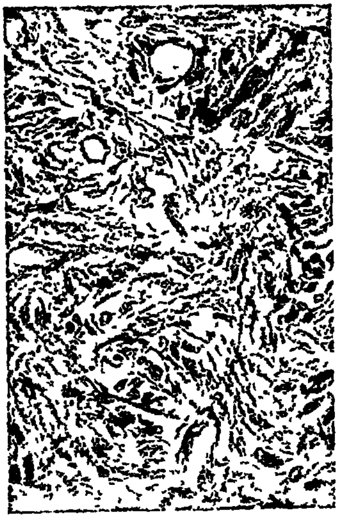

FIG V—Mesenteric fibroma in female guineapig after a course of injections of œstradiol benzoate 80 µg thrice weekly for four months (× 240)

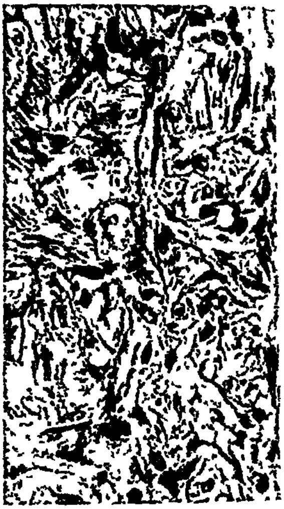

FIG. VI—Fibroma of abdominal wall in female guineapig after a course of injections of œstradiol benzoate 40 µg thrice weekly for four months. (× 240)

Microscopically the experimental uterine and extra-uterine tumours are fibromyomas. They are sometimes very rich in cells, probably fibroblasts. They invade also certain tissues, such as smooth and striated muscles, pancreas, and liver, destroying these structures (Lipschütz, Vargas, and Iglesias 1938); but the tumours regress gradually when the injections are stopped (Lipschütz, Iglesias, and Vargas 1939). There is scarcely any need to insist on the great interest of these findings in the problem of tumorigenesis in general and of the origin of fibromyomas in women. It seems very probable that the uterine fibromyomas in women are a local sign of an endocrine disturbance.

EXPERIMENTS WITH TABLETS OF ŒSTRADIOL

What is the shortest time in which follicular hormones can produce tumorigenesis? This question is of the utmost importance in the hormone treatment of women We have recently studied it, using the technique of Deanesly and Parkes (1938), with tablets of œstradiol introduced subcutaneously. It seemed probable that the greater tumorigenic action of the esterified œstradiol, as compared with that of the free hormone injected every second day, is due to the maintenance of a rather stable concentration of hormone in the body fluids thanks to the continuous flow of the hormone into the body fluids from the site of injection. Accordingly we thought that by introducing a tablet of œstradiol subcutaneously, which should assure a continuous absorption, we might establish a similar condition

Into each of 7 female guineapigs, castrated three months before, a 20 mg. tablet of œstradiol (prepared by Messrs. Ciba of Basel) was introduced through a slit in the skin. The vagina opened in about three days and remained open throughout the whole time of observation with but one exception. Each of a second group of 7 castrated females received a 50 mg. tablet.

There was also the characteristic development of the teats but in a rather less pronounced degree than when œstradiol benzoate, even in small quantities, was injected.

In the group of 7 females treated with 20 mg. tablets, one animal showed the uterine bleeding that we so often observe in our guinea-pigs treated a long time with follicular hormones. It is remarkable that blood on the vulva was seen in this animal as early

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* We are indebted to Dr Carl Miescher of Messrs Ciba of Basel, to Dr M Tausk of Messrs Organon of Oss (Holland), to Prof E C Dodds, to the Laboratoires Français de Chimiothérapie, and to the Laboratoire du Docteur Roussel of Paris for a very liberal supply of natural and esterified hormones and of stilbœstrol

OTTAWA CIVIC HOSPITAL

as eighteen days after the tablet was introduced This early appearance of blood was noted also in 4 of the 7 animals treated with the 50 mg tablets—in one of them as early as fourteen days after the start of the treatment

The increase of body-weight was insignificant or nil, as generally happens with guineapigs injected over a long period with great quantities of follicular hormone (Koref, Lipschütz, and Vargas 1939)

EARLY DEVELOPMENT OF UTERINE TUMOURS

One of the most remarkable features of these experiments was the early development of uterine and, in a less degree, extra uterine tumours A survey of these fourteen experiments with special reference to tumorigenesis is given in table I The first of these animals died nineteen days after the tablet was introduced Pus and fibrinous masses were found on the abdominal side of the diaphragm The weight *of the uterus was double the normal Small subserous* tumours were found on both uterine horns (fig IX) This was the first time we found tumorigenesis in an experiment of so short a duration † Indeed we were accustomed to kill our animals, injected with follicular hormones, not before seven weeks' treatment, when tumorigenesis with the benzoate ester becomes manifest Small uterine tumours were found also in 3 other animals killed twenty one or twenty two days after the tablets were introduced In 1 of these animals the tumours had already attained a remarkable size, they were found in the mesometrium (fig XA), where the fibromyomas, as we found in former experiments of longer duration, may become very large It is of special interest that in the present experiments with tablets the frequency of mesometrial tumours was greater than in any other series We have learnt from our observations on 260 animals with experimental tumours due to follicular hormones that the sites of the tumours vary enormously, as is the case with uterine fibroids in women There must be some law on which the position of the tumour depends, and our present finding of a great frequency of mesometrial tumours speaks decisively in favour of such an assumption

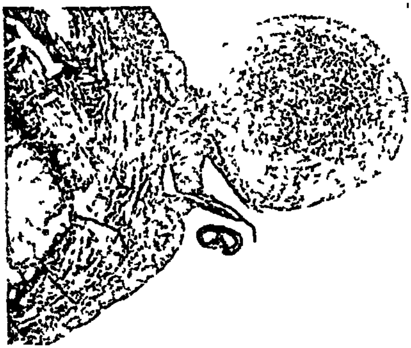

FIG III—Pedunculated uterine fibromyoma in a guineapig after a course of subcutaneous injections of 80 µg of œstradiol benzoate thrice weekly for four months (× 15)

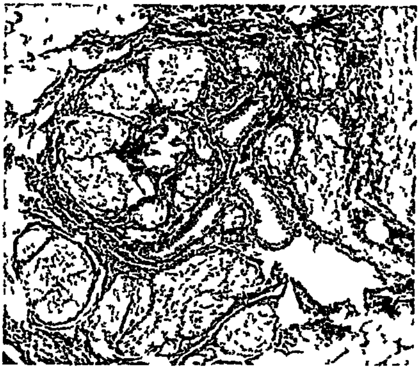

FIG IV—Small apical myoma near fallopian tube in a guineapig after a course of injections of 80 µg of œstradiol benzoate during 68 days Note myomatous masses surrounded by adipose tissue The small epithelial tubes among the muscle tissue probably belong to the wolffian body (× 82)

COMPARISON OF TUMORIGENESIS WITH TABLETS AND WITH SUBCUTANEOUS INJECTIONS

As will be seen from table I, the animals are given marks for tumorigenesis (Lipschütz and Vargas 1939b), these marks increase with the time In animals killed after a treatment of forty nine to fifty four days *these uterine tumours are highly developed* (figs XI and XII) In our former experiments with injections of follicular hormones a special type of uterine tumour was found in castrated females, the so called "apical" tumour It originates in the mesosalpinx where the tube joins the uterus At its beginning this experimental tumour *is often* almost a true myoma, whereas in general, in our work with tumorigenesis, it is the fibromyoma with a pronounced tendency to fibrosis which prevails This apical myoma is, *at its beginning*, very similar to the myoma of von Recklinghausen also in other features its limits are not very sharp (the tumour is surrounded, in our experimental animals, by adipose tissue), small epithelial tubes, probably belonging to the wolffian body, are sometimes included in the myomatous tissue Later on the apical tumour becomes fibromatous and increases enormously In our present experiments these apical tumours became very remarkable in almost all experiments of seven or eight weeks' duration (figs XI and XII) with but one exception In several animals there was a cystic enlargement of the tubes, in combination with a big apical tumour in one case (no 5) These cysts sometimes become enormous there may be also multiple fibrous tumours in the wall of such a cyst (experiments not yet published)

In some experiments the tumoral reaction in the apical region is limited to fibrous strands, which are an almost constant phenomenon especially in extragenital regions, in animals treated a long time with follicular hormones We find this fibrous extragenital reaction also in most of the animals of the present series near the upper pole of the kidney and in different parts of the mesentery (figs XI and XII) The fibrous reaction is a general feature of the chronic intoxication with follicular hormones There was, in our experiments with injections, a great development of fibrous tissue in different parts of the body: in the submucosa of the duodenum, in the pancreas, in the spleen, and in the mammary gland A similar finding is reported by several authors, especially as regards the prostate and seminal vesicles under the influence of the follicular hormone (Loeb and Simpson 1938, Loeb, Suntzeff, and Burns 1938). Deanesly and Parkes (1938) found an extreme development of fibrous tissue in the seminal vesicles in experiments with tablets.

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† Recently in an experiment of Dr José Chaume working in this laboratory with injections of the monocaprylate ester of œstradiol small uterine tumours were found as early as fifteen days after the beginning of treatment

The uterus likewise becomes affected with fibrosis in experiments with injection of follicular hormones. A. Lacassagne, J B Collip and his co-workers, and others have already attracted attention to this type of uterine reaction when follicular hormones are given a long time. The same is known for the prostate and the seminal vesicles It is rather contradictory to test follicular hormones simply by the increase of uterine weight beyond the normal. It seems to us that, for the uterus, the only way of testing is to determine the quantity of hormone necessary to maintain the normal uterine weight in a castrated animal—i e, to determine the "useful hysterotrophic dose" (Lipschütz, Rodríguez, and Vargas 1939)

There may be also a necrosis of the uterine wall, general or localised The latter was present in one of the animals of this series (no. 5).

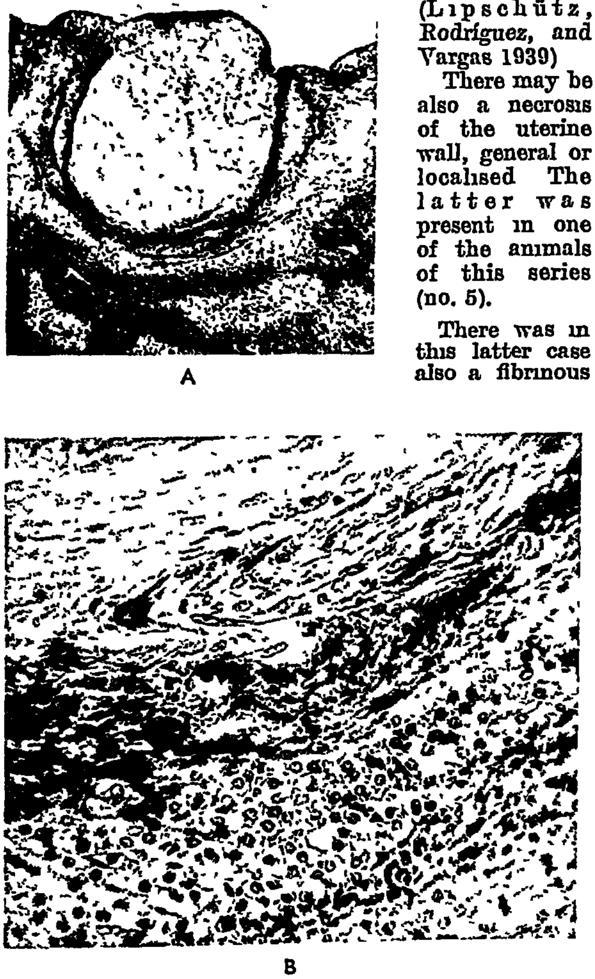

FIG VIII—Small subserous hepatic fibromyoma in female guineapig after a course of injections of œstradiol benzoate 40 µg for four months A, × 20; B, × 240. Note penetration between and destruction of hepatic cells.

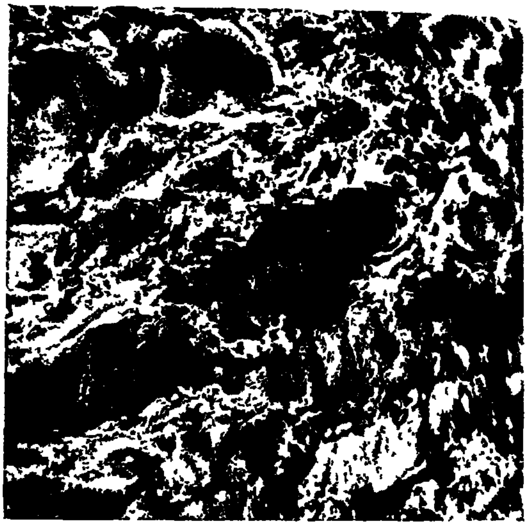

FIG VII—Fibroma of abdominal wall penetrating between and destroying striated muscle fibres. (× 240)

There was in this latter case also a fibrinous purulent peritonitis localised to the uterus. As stated in our former experiments, this form of peritonitis can be observed in about 5–10 per cent. of the animals treated for several months with injections of follicular hormones. It is to be explained in the following way The vagina being open for several weeks and even months and a cystic glandular hyperplasia being established, an infection of the uterine wall takes place. A pyometra is the result. The fibrosis and necrosis of the uterine wall favour the migration of the infection to the uterine serosa.

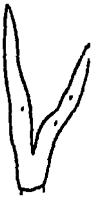

FIG IX—Diagram of uterus of guineapig nineteen days after subcutaneous insertion of a 20 mg tablet of œstradiol Uterus weighed 2 4 g. (*normal* = 1 g). Small subserous fibroids Mark for uterine tumours = 0·5. (Life-size.)

In experiments of greater duration—e g, forty-nine to fifty-four days—there was also a great development of extragenital tumours (figs. XI and XII)

Attention should be drawn also to another feature of tumoral reaction—namely, the "tumoral seed," found especially on the spleen and the surrounding parts, such as the abdominal wall and the anterior part of the stomach. This seed is sometimes the only tumoral reaction of an animal; we have interpreted it as a sign of lesser tumoral sensitiveness of an animal (Lipschütz and Vargas 1939b). Sometimes this reaction is associated with big abdominal tumours (fig XI). In the male the tumoral seed is the rule (Koref, Lipschütz, and Vargas 1939, Jedlicky, Lipschütz and Vargas 1939) A remarkable feature of the distribution in the present series is the less pronounced frequency of splenic tumours, which were very common in our earlier experiments

Notwithstanding these differences, the degree of general tumorigenesis with tablets, as summarised by the total mark (last column of table I), is, in the six experiments lasting forty-nine to fifty-four days no less than in our former experiments with injections of œstradiol benzoate. In 23 castrated females injected with 80 µg. thrice weekly for fifty-six to eighty-four days, the average total mark of tumo-

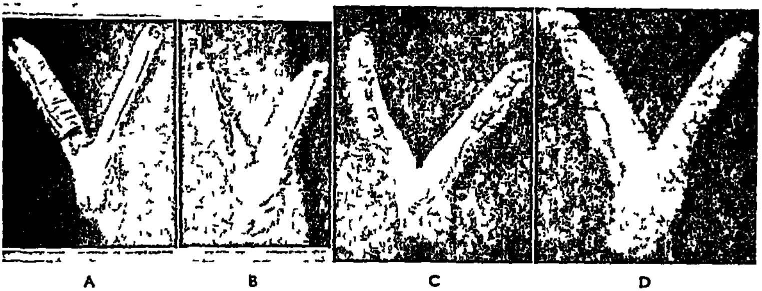

FIG X—Dorsal aspect of uteri of guineapigs showing parametrial tumours after subcutaneous insertion of a tablet of œstradiol (A) after 22 days, mark 1, (B) after 53 days, mark 2, (C) after 31 days, mark 2, (D) after 49 days, mark 3 (Life-size)

genesis was 5·7 ± 0·524 The present 6 castrated females, killed forty nine to fifty four days after receiving the tablet, had a total tumorigenic mark of 5·8 In other words, probably no female guineapig will escape tumorigenesis when tablets of 20–50 mg of œstradiol are present in its body for more than two weeks, and in seven weeks a very high degree of tumorigenesis can be attained

DANGER OF CONTINUOUS ABSORPTION OF HORMONE

The quantity of œstradiol lost by the tablets can be determined by weighing the dried tablet recovered from the animal (table II) In the experiments with 50 mg tablets the percentage of absorption of œstradiol calculated per month was about the same as in Deanesly and Parkes' (1938) experiments in 8 guineapigs with œstrone tablets, but in the experiments with 20 mg tablets the percentage of absorption was several times greater On the other hand, there is a remarkable coincidence as to the total quantities absorbed (table II, third column) This is probably due to the fact that the diameter of the 20 mg tablet was the same as that of the 50 mg tablet The amount of hormone absorbed from the tablet is evidently related to the area of its surface

It is of great interest to compare the present experiments with former ones in which equal quantities of free œstradiol per month were introduced, not by tablets but by subcutaneous injections thrice weekly for several months (Lipschütz, Rodriguez, and Vargas 1939) As much as 2·5 mg of free œstradiol per month administered by injection for three or four months (200 µg thrice weekly) caused only a beginning of tumorigenesis similar to what we observed in the present series with tablets in two or three weeks. Even with the injection of 5 mg of free œstradiol per month (400 µg thrice weekly) for fourteen weeks tumorigenesis was less than with 4 mg per month absorbed from the tablet during seven weeks (the average of the six experiments of the present series)

TABLE I—FINDINGS IN CASTRATED FEMALE GUINEAPIGS TREATED WITH SUBCUTANEOUS TABLETS OF ŒSTRADIOL

No	Body weight		Duration of experiment (days)	Weight of tablet		Uterine bleeding	Weight of uterus* (g)	Uterine tumours		Extra uterine tumours		Total mark for tumorigenesis
	At start (g)	At end (g)		At start (mg)	At end (mg)			Subserous and mesometrial (mark)	Apical (mark)	Visceral and abdominal wall (mark)	Spleen (mark)	
11	610	450	10	20	16	0	2·4	0·5	0	0	0	0·5
15	530	490	21	20	16	+	3·7	0·5	0	0	0	0·5
12	440	475	31	20	15·5	0	2·0	1	0·5	0·5	0	2
13	570	590	31	20	12	0	3·5	2	0·5	0·5	0	3
17	570	610	49	20	10·5	0		3	2	2	0·5	7·5
18	350	405	49	20	16·5	0	1·9	0	2	0·5	0·5	3
20	490	530	50	20	13·5	0	2·5	0·5	2	1	0·5	4·5
2	510	530	22	50	46	+	2·5	1	0	0·5	0·5	2
3	480	470	22	50	46	+	2·4	0·5	0·5	0·5	0·5	3
1	510	500	32	50	47·5	0	1·7	0·5	0·5	0·5	0·5	2
4	450	460	32	50		0	2·3	0·5	0·5	0·5	0·5	2
7	500	525	53	50	46·5	0	2·[illegible]	2	0·5	2	0·5	5
9	480	590	53	50	44·3	+	2·4	2	3	2	1	8
5	330	530	54	50	41·5	++	7·9†	3	2	0·5	0·5	6

* Uterus with mesometrial tumours † Localised or diffuse fibrinopurulent peritonitis

This shows clearly that the continuous flow of œstradiol in the body fluids enhances the tumorigenic reaction.

TABLE II—ABSORPTION OF ŒSTRADIOL FROM SUBCUTANEOUS TABLETS IN GUINEAPIGS

No	Total absorption (mg)	Absorption calculated per month		No	Total absorption (mg)	Absorption calculated per month	
		Mg	Per cent			Mg	Per cent
11	4	6	30	2	4	6	12
15	4	6	30	3	4	6	12
12	4·5	4·5	22	1	2·5	2·5	5
13	8	8	40	7	3·5	2	4
17	9·5	6	30	9	5·5	3·3	6
18	3·5	2	14	5	8·5	5	10
20	6·5	4	20				

SUMMARY

Uterine and extra-uterine tumours can be produced in the guineapig by introducing a tablet of œstradiol beneath the skin. These tumours are similar to the uterine and extra-uterine fibroids or fibromyomas produced previously by a long course of injections of follicular hormones (free œstradiol and œstrone, different esters, and stilbœstrol)

The uterine tumours (subserous and mesometrial) begin to appear as early as 2½–3 weeks after the introduction of the tablet Uterine bleeding also can appear at this early date. In about seven weeks a high degree of uterine and extra-uterine tumorigenesis may be attained with tablets of follicular hormones.

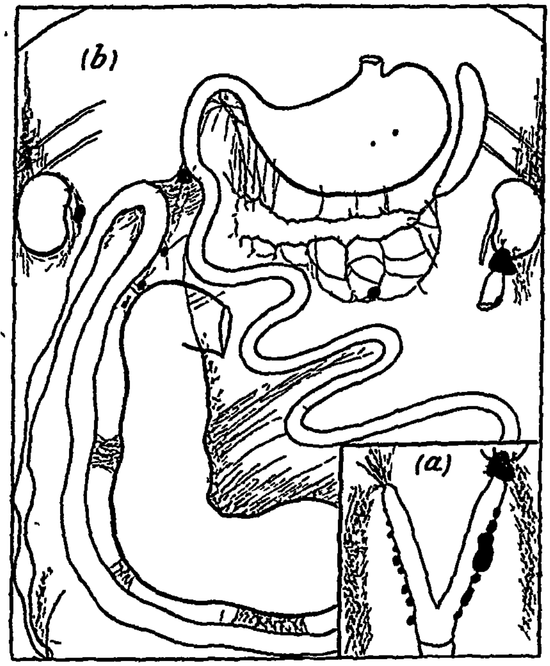

FIG XI—Diagram showing sites of uterine and extra-uterine tumours in a guineapig 49 days after subcutaneous insertion of a tablet of œstradiol: (a) tumours on ventral aspect of uterus, mark 3 (for tumours on dorsal aspect see fig XD), and left apical tumour, mark 2; (b) tumours on other abdominal viscera: epiploön, mesentery, and hilum of right kidney, mark 2; tumoral seed on spleen, mark 0·5 *Fibrosis of mesentery and of abdominal wall, especially round both kidneys, on both sides of the uterus, and at apex of right uterine horn*, is shown. Total mark 8·5.

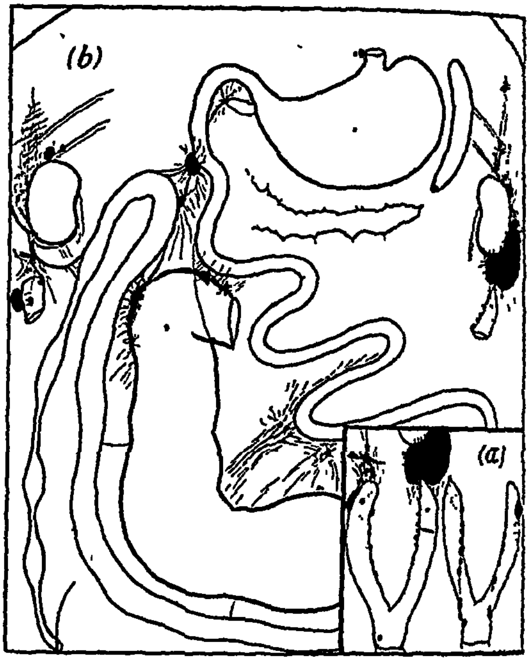

FIG. XII—Diagram showing sites of uterine and extra-uterine tumours in a guineapig 53 days after subcutaneous insertion of a tablet of œstradiol: (a) numerous uterine tumours of different sizes, mark 2, and the apical tumour between left uterine horn and kidney, mark 3; (b) tumours on other abdominal viscera, mesenteric tumours, tumour near œsophagus, small subserous tumour of stomach, tumours of abdominal wall, mark 2; small tumour of spleen, mark 1 Fibrosis of mesentery, of abdominal wall, and of apical region of right uterine horn is shown. Total mark 8.

The degree of tumorigenesis with tablets of œstradiol is much greater than with injections of free œstradiol when equal quantities are compared. This is evidently due to the continuous absorption and the continuous flow of œstradiol in the case of tablets, as contrasted with the discontinuous flow in the case of three injections of free œstradiol in the week The treatment with tablets is comparable —as regards the danger of tumorigenesis—to a treatment with esters of œstradiol administered by injection without intervals free from treatment

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TREATMENT OF ULCERATIVE COLITIS BY COD-LIVER OIL RETENTION ENEMATA

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(*With Illustrations on Plate*)

IN 1936 Davson published a paper in this journal on the tissue response to subcutaneous injection of cod liver oil He stated " that the study of the histological reaction to cod liver oil tends to support the view that the application of the oil to wound surfaces will promote the processes of repair and healing' Löhr (1934), Zuelzer (1934), and Steel (1936), who reported the effects of applications of cod liver oil to burns and ulcerated surfaces, suggested that the vitamin A content of the oil was the probable effective therapeutic agent, but Davson's work shows that this is unlikely The possible use of applications of cod liver oil in ulcerative colitis was suggested to me by Davson, and I started such treatment in January, 1937, since when six cases have been treated and followed up

All the cases were given a high calorie low residue diet, and after the first few days I so gel was administered Retention enemata were generally not started until rest in bed, starch and opium enemata, or morphine if necessary, had reduced the diarrhœa and bowel irritability to a degree that made the retention of oil possible The early injections of oil were given during the day , but, when the patient could retain oil for several hours, the injections were given in the evening and were often retained through the whole night The initial dose was 2 oz , and this was increased by 2 oz at a time to a maximum of 8 oz in accordance with the patient's capacity of retention and with regard to the avoidance of any discomfort When an opaque enema and radiography showed that the colon up to the splenic flexure or the transverse colon was involved, the bed was tilted up from the foot for about an hour after the administration of the enema

CASE RECORDS

CASE 1.—Female, aged 20 Symptoms appeared suddenly in early August, 1936, with diarrhœa with mucus and blood Stools increased to twelve a day She lost 20 lb in two weeks and ran an evening temperature to 103° F She was admitted to hospital on Aug 29, 1936, her general condition being very poor On sigmoidoscopy no actual ulceration was seen, but the mucosa had the bright pink velvety appearance of an acute inflammation

After two weeks' conservative treatment, zinc ionisation was applied to the lower bowel, and steady improvement ensued She left hospital on Oct 10 free from symptoms but relapsed within two months and was readmitted on Jan 10, 1937, when she had six to eight stools a day with much blood and mucus and there was a moderate evening pyrexia She was treated at first with starch and opium enemata and morphine for two weeks, after which cod liver oil retention enemata (4 oz) were given every morning At the end of three weeks of such treatment she was passing one normal formed stool a day and she had gained 8 lb She left hospital on March 11, 1937, and continued with oil enemata twice weekly for three months Twenty months later she reported herself as quite well and as having been free from symptoms in the intervening period An opaque enema and radiography on Feb 10, 1937, showed dilatation of the rectum and loss of haustration of the distal half of the transverse colon and all the colon beyond There was fine irregularity of the edge of the sigmoid colon shadow Re-examination on March 3, 1937, showed distension of sigmoid colon and lack of haustration in affected parts of the colon, but after evacuation these portions showed normal activity and the colon edge was sharp and smooth

CASE 2 —Female, aged 55, admitted to hospital on Oct 24, 1936, the illness having started three months previously with diarrhœa and stools up to twelve a day Stools were loose and contained much bright blood She had vomited once and had a constant griping pain in the epigastrium The abdomen was distended and tender in the lower segment Pyrexia up to 102° F in the evening Sigmoidoscopy on Nov 7 showed that the mucosa was much congested and bled very easily, and small ulcers were seen

Initial treatment consisted of starch and opium enemata and, later, zinc ionisation There was a slight improvement, but after eleven weeks in hospital there were still three stools a day, loose and with much blood Cod liver oil retention enemata were begun on Jan 6, 1937, 2 oz at first, increasing to 8 oz Since the whole colon was affected, the foot of the bed was raised after the injection of oil Improvement thereafter was amazingly rapid Sigmoidoscopy on Jan 15 showed that the mucosa was normal in appearance, without ulcers or bleeding Stools at that time were not quite formed but were free from blood She left hospital on Feb 17 and she has been quite well to date An opaque enema and radiography on Oct 30, 1936, showed the disorganisation of mucosa of the whole of the large intestine (fig I on plate) Re-examination on Jan. 18, 1937, showed improvement mainly noticeable in the rectum and the sigmoid, the edges of the shadow being sharp and clear (fig II on plate) On Feb 8, 1937, there was considerable improvement evident throughout the colon, and there was little haustration, but the surface appeared no longer granular

CASE 3 —Female, aged 30 Symptoms first appeared in July, 1935 Three months later she was treated with colonic irrigation, and by December, 1935, she had recovered She remained well for twelve months, but in December, 1936, blood appeared in the stools, the number of which increased to fifteen a day She was admitted to St George's Hospital on Jan 26, 1937 Her general condition was fairly good, but there was slight evening pyrexia for the first two weeks in hospital

Treatment was begun on Jan 30 with rectal injections of cod liver oil 4 oz , and this was increased two days later to 8 oz. The injections were given in the late evening and were retained for an increasing period up to ten hours Improvement was rapid, and after two weeks' treatment she was passing only one or two stools a day, semi-solid but unformed and free from blood She left hospital on March 2, 1937, and has been free from symptoms since—i e , for twenty two months An opaque enema and radiography on Jan 29, 1937, showed a complete lack of haustration of the transverse and distal portions of the colon and the mucosal relief of the pelvic colon appeared finely granular throughout and was rough in outline Re-examined on Feb 18, 1937, the transverse colon showed normal haustration, the descending and pelvic colons showed haustration well marked but of lesser degree, and the surface granularity and irregular outline were no longer visible

CASE 4 —Female, aged 51 Symptoms first appeared in 1925, when she noticed a mucous discharge with her stools Three years later diarrhœa became troublesome and she was treated in hospital with Yatren and colon lavage without much improvement. She was again in hospital in 1928 and in 1932 and was treated with starch and opium enemata with only moderate improvement

On sigmoidoscopy in May, 1936, the mucosa was seen to be hæmorrhagic and granular and bled easily, but no ulceration was seen At that time stools were not frequent, but she was passing blood. Sigmoidoscopy in November, 1936, revealed very granular mucosa with ulceration and bleeding and evident mucopus.

She was admitted to St. George's on March 30, 1937, there having been a considerable hæmorrhage seven weeks earlier. She was passing ten stools a day with a good deal of blood and mucus. She was very thin, weighing 8 st. and in the first four weeks lost 8 lb. in weight. During this time there was slight pyrexia. Treatment with cod-liver oil began on April 2 with 4 oz., increasing gradually to 6 oz. at end of two weeks. At first the enemata were retained for only little more than an hour, but the period of retention gradually increased. After eight weeks' treatment the stools were semi-solid and free from mucus and blood, and numbered one or two a day. There had been a steady gain of weight during the latter half of this period. Improvement steadily increased, and she was discharged on June 10, 1937.

She remained under observation until June, 1938, and always reported herself as free from symptoms. In November, 1938, however, in response to inquiry, she stated that there had been some relapse but she had since derived benefit from an osteopath. An opaque enema and radiography on April 12, 1937, showed involvement of all the large intestine distal to the middle of the transverse colon, with a granular surface, feathering of the edge, and loss of haustration. At re-examination on June 2, 1937, a few contraction rings were present in the affected parts of the colon, which now had sharply defined edges throughout. On April 14, 1938, further improvement was evident, though motility was not normal.

CASE 5.—Male, aged 31, admitted to hospital in November, 1936, with a history of bouts of diarrhœa, with loose watery motions containing blood, for the previous six years. During the last six months he had been becoming progressively worse with abdominal pain and loss of weight. There was considerable pyrexia for the first three weeks, and he had incontinence of fæces and tenesmus

He was treated initially with yatren, and there was some diminution of number of stools, but other symptoms persisted. He was then treated with cod-liver oil retention enemata for six weeks, and there was progressive improvement, the stools becoming normal in frequency and consistence. The initial sigmoidoscopy had revealed a definite ulcerative condition, and after oil treatment further examination showed only one or two shallow ulcers, the general state of the mucosa being much improved.

He left hospital in February, 1937, was well for a year, but had a slight relapse in January, 1938; a further exacerbation of symptoms occurred in May, 1938, and he was readmitted to hospital the following month. Sigmoidoscope examination showed that the mucosa was much inflamed and granular and bled easily, but no actual ulcers were seen. He was treated again with oil, and steady improvement ensued. He left hospital in August, 1938. He has since been quite well but continues to have one retention enema a week.

An opaque enema and radiography on Nov. 24, 1936, showed great dilatation of the ascending and transverse colons; the descending colon had no haustration, its edge showed deep feathering, and there was typical surface granularity. At re-examination after the first oil treatment the descending and transverse colons were almost normal, though the distal half of the transverse colon was tube-like. At re-examination on readmission on June 8, 1937, the colon on either side of the splenic flexure showed a ragged edge, and two rather deep ulcers were visible. Further examination not made.

CASE 6.—Male, aged 24. Diarrhœa started in October, 1935, and he was in hospital from November to December of that year and again on two occasions in 1936, but stools were never reduced to less than three or four a day.

He was admitted to St. George's Hospital on April 17, 1937, having become much worse in the past four months, passing twelve to fourteen stools a day, which were green and watery and contained much mucus and blood. There had been progressive loss of weight. Sigmoidoscopy on April 20, 1937, showed that the mucosa was congested and granular and bled easily, and there were superficial sloughs. Oil retention enemata were started on May 18 and continued for six weeks, with decrease in the number of stools and a slight gain in weight. He could, however, never retain oil for more than two hours Yatren, olive-oil retention enemata, and zinc ionisation were successively tried, but all caused irritation and pain.

Sigmoidoscopy on Sept 8, 1937, showed that the mucosa was still red and ulcerated and bled easily, and the lumen seemed narrowed. A transverse ileostomy was performed on Oct. 2, 1937, and the patient died three weeks later.

SUMMARY

Cases 1, 2, and 3, in which the previous duration of the illness had been six months, three months, and eighteen months respectively, have now been apparently quite well and free from symptoms for two years. Case 4, with a twelve years' history of colitis, remained well for fifteen months and then stated, in answer to inquiry, that she had relapsed but had obtained benefit from an osteopath. Case 5, with a six years' history, remained well but not entirely free from symptoms for fifteen months and then was readmitted for a relapse, but since having further treatment has been symptom-free for six months. Case 6, with an eighteen months' history, showed some improvement after the treatment; but, since hæmorrhage persisted, an ileostomy was performed, and the patient died later. The clinical results were confirmed by sigmoidoscopy and radiography.

DISCUSSION

It is difficult to draw any definite conclusions from the treatment of these few cases; the fact that three out of six cases have shown complete remission for two years is not remarkable, but it is perhaps noteworthy that in case 1, in which severe relapse occurred two months after apparently successful treatment by other methods, subsequent treatment of the relapse by cod-liver oil retention enemata produced a more lasting remission much more rapidly than the previous treatment, and that in case 2, though under ordinary treatment some improvement occurred, symptoms persisted till oil retention enemata were used. As might be expected, better results were obtained, and more quickly, in the cases with the shorter previous history. It is clear that the method described is by no means certainly curative, but one is impressed by its efficacy in shortening the illness in some cases, its effect in reducing pain, and the greater tolerance of the patient to cod-liver oil compared with other local applications. It has seemed to me to be of advantage to continue the treatment two or three times a week for a few months after remission has been established, the patient being instructed in self-administration.

Since these observations were begun I have found three references to similar treatment Spiegel (19 reported 11 cases treated with an emulsion of 4 per cent. of the oil in aqueous solution of acacia and given in doses of 2–8 oz two or three times a day The cases observed were those which had n responded to preliminary control treatment; 9 of the 11 cases showed improvement with cod-liver oil

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rapy Russell Best (1938) published a report of cases treated with oil retention enemata of 2-4 oz ministered after a small saline wash-out, 13 es became symptom free for periods of three to enty-three months He thought the treatment ful as an adjunct to other methods Manville 38) has described a method of topical application oil by spraying through a proctoscope He gives clinical details but confirms Spiegel's findings

I am grateful to Mr R Marnham for the moidoscope examinations and reports, and to Dr R Mather Cordiner for the X-ray examinations

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ULPHANILAMIDE IN TYPHOID FEVER

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IN the autumn of 1938 the admission of a series of tients suffering from typhoid fever provided an portunity for the therapeutic trial of two of the lphanilamide group of drugs—namely, Prontosil d M. & B 693 (Dagenan) Although in our perience and that of others these drugs have oved successful in the treatment of infections used by *B coli*, notably pyelitis, only one account, far as we are aware, has yet appeared of the nployment of M & B 693 in a case of enteric ver[1] Another patient (case 7 in the series), admitted is year, was treated with a combination of M & B 3 and Felix's Vi serum

CASE RECORDS

CASE 1—Male, aged 21, admitted on Nov 9, 1938, th a history of headache, vomiting, and abdominal ain of sudden onset a week previously On dmission the patient was toxic, the tongue was ry and furred The spleen was palpable, and there ere abundant rose spots upon the trunk and arms emperature 100° F, pulse rate 100, respiration-ate 28 Blood culture was positive for *B typhosus*; Veil-Felix reaction positive for H agglutinins up o 1 in 1920 The general condition remained nchanged for the next two days

On the 12th it was decided to try prontosil album, nd a tentative dose of gr 15 thrice daily was rescribed The same evening the temperature fell o normal, but it rose again next day and by the 5th had reached 101° F The patient complained f acute abdominal pain and developed an attack of holecystitis with jaundice Prontosil was continued until the 19th, and for the cholecystitis iexamine and local applications of heat were employed ntil the 21st, by which date the attack of cholecystitis had subsided During the administration f prontosil there was considerable improvement n the patient's general and mental condition, but he temperature rose to 100° F on most evenings, nd blood culture on the 17th was again positive

On the 22nd it was decided to try M & B 693 An initial dose of gr 30 was followed by one of gr 15 every four hours Within twenty-four hours the temperature fell to 97° F. from 100° F and, with the exception of a few flickers to between 99° and 100° F, remained normal or subnormal until the date of discharge (Jan 10, 1939) Blood culture was negative on Nov 26, 1938 M & B 693 was discontinued on Nov 29, 1938 *B typhosus* was never recovered from the fæces or urine in spite of repeated examinations (See fig 1)

CASE 2—Male, aged 19, admitted on Nov 10, 1938, with a history of onset of headache, shivering, pain in the limbs, vomiting, and diarrhœa on Oct. 31, 1938 The patient had been delirious, and a rash was noted on Nov 9, 1938 On admission toxæmia was severe There were sordes on the lips; the tongue was red and glazed, typical rose spots were present on the trunk, and there were signs of congestion at the bases of the lungs The patient was lethargic but not delirious Temperature 102° F, pulse rate 110, respiration-rate 20 Blood culture was negative for *B typhosus*, but the serum agglutinated this organism in a dilution of 1 in 480

For the next three days there was no change in the patient's condition Oral administration of gr 15 of prontosil thrice daily was then instituted The temperature fell to 99° F by the next morning and to normal on the next day (Nov 14) The same evening, however, there was a rise to 100° F, but from this point the temperature settled by lysis, becoming normal by the evening of the 18th Prontosil was discontinued the next day The patient's general condition was satisfactory and the temperature normal until the 27th, when there was a relapse The temperature rose to 102 4° F and the patient complained of stiffness and cramps in the legs Blood culture was positive

On the 29th M & B 693 was given in doses of gr 15 thrice daily. On Dec 1 the cramps had disappeared, the patient felt better, and the temperature had again reached normal Blood-culture was sterile the next day. From this point recovery was steady and uneventful, and the patient was discharged on Jan 10, 1939 (See fig 2)

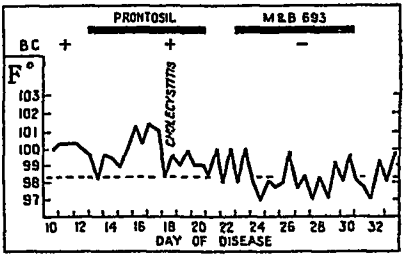

FIG 1 (case 1)—All the figures represent cases of typhoid fever B C = blood-culture

CASE 3—Male, aged 20, admitted on Nov 10, 1938, with a history of shivering, nausea and diarrhœa of one week's duration On admission there was moderate toxæmia, and a few rose spots were present upon the abdomen but the spleen was not palpable Temperature 101° F The serum agglutinated *B typhosus* at 1 in 480, but the organism was not found in the fæces or urine Treatment with prontosil (gr 15 thrice daily) was started on the 12th but discontinued the next day because of the appearance of deep cyanosis, drowsiness, and epistaxis The general condition improved slightly (without prontosil) but the temperature remained in the region of 101° F There was deafness in the left ear and some congestion of the bases of the lungs

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[1] Coxon R T and Forbes J R (1938) *Lancet* 2 1412

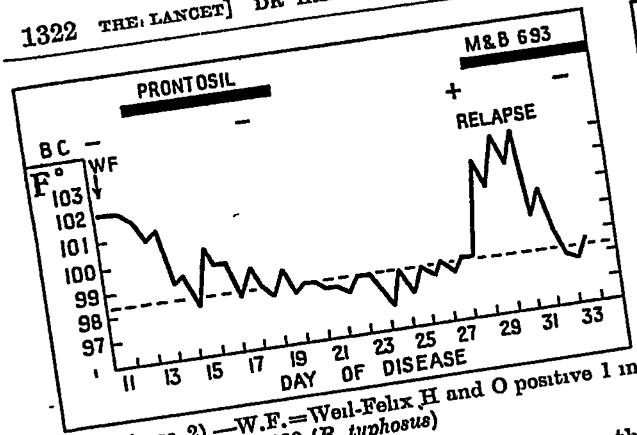

FIG. 2 (case 2)—W.F.=Weil-Felix H and O positive 1 in 480 (*B. typhosus*)

On the 17th blood-culture was positive; on the 22nd administration of M. & B. 693 (gr. 15 thrice daily) was begun. On the 26th blood-culture was negative. The temperature fell by lysis, becoming normal on the 29th, on which date treatment with M. & B. 693 was stopped The deafness and congestion of the lungs had disappeared, and apart from a little irregularity in the temperature, which finally settled to normal on Dec. 6, 1938, the remainder of the patient's stay in hospital was uneventful. (See fig. 3.)

CASE 4—Female, aged 38, admitted on Nov. 11, 1938, with a history of onset with abdominal pain three weeks previously and diarrhœa of a week's duration. On admission there was severe toxæmia. The tongue was fissured and covered with brown fur; the abdomen was distended and covered with profuse rose spots; the spleen was not palpable. Temperature 98 4° F. (collapse), pulse-rate 128, respiration-rate 26. Next day the temperature rose, and by the 14th it was 102° F. On the 12th blood-culture was sterile, but the serum agglutinated *B. typhosus* at 1 in 480. There was frequency of micturition, the urine containing *B. typhosus*. Symptoms of cystitis increased, and the patient became very lethargic.

Administration of M. & B. 693 was begun on the 19th. The evening temperature on that day dropped by two degrees and never again rose to its former level. On the 21st the urinary symptoms had abated

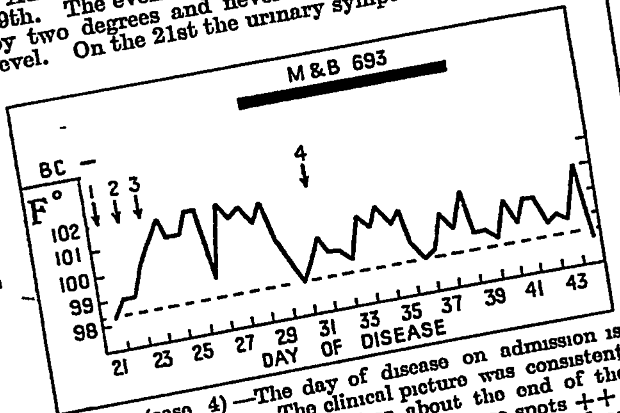

FIG. 4 (case 4)—The day of disease on admission is only approximate. The clinical picture was consistent with that of typhoid fever at or about the end of the third week of the disease Arrow 1 = rose spots ++, arrow 2 = urine positive for *B typhosus*; arrow 3 = fæces positive for *B. typhosus*; arrow 4 = urine negative for *B. typhosus*.

and urine-culture was sterile There was a little nausea and vomiting, probably due to the drug, but in spite of this the treatment was continued until the 28th. The fæces, which had contained *B. typhosus*, were reported as being free from this organism on the 20th. From this point the general

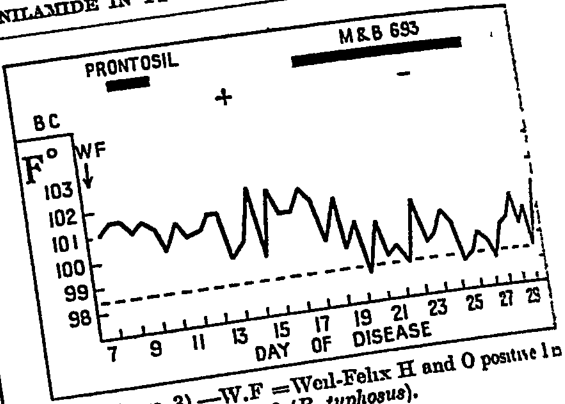

FIG. 3 (case 3).—W.F =Weil-Felix H and O positive 1 in 480 (*B typhosus*).

condition rapidly improved, and the remainder the patient's stay was uneventful apart from the development of an exudate upon the fauces and pharyngeal wall. Swabbings from this exudate were reported to contain only yeasts. (See fig 4.)

CASE 5—Male, aged 18, admitted on Nov 9, 1938, with a history of onset with headache and vomiting a week previously and of abdominal pain and diarrhœa of three days' duration. On admission toxæmia was severe; tongue dry and furred, spleen palpable; rose spots profuse upon trunk and arms; congestion of the left base. On the 10th blood culture was positive for *B. typhosus*, the serum agglutinated H at 1 in 1920. The organism was not recovered from fæces or urine. The patient's cond tion steadily deteriorated with increasing delirium; there were "pea-soup" stools. By the 11th he wa in the typhoid state.

Prontosil (gr. 15 thrice daily) was given from th 12th but with little apparent effect It was dis continued on the 18th owing to the appearance of cyanosis and a drug rash. The blood-culture wa still positive. On the 21st the temperature reached 104° F. and the general condition was very grave It was decided to give M. & B. 693 (gr. 15 four hourly). Two days later the temperature reached normal, but the drug was discontinued because o cyanosis and a rigor. By the 26th the temperatu had risen again to 102° F. M. & B. 693 therapy w again attempted but had to be abandoned the ne

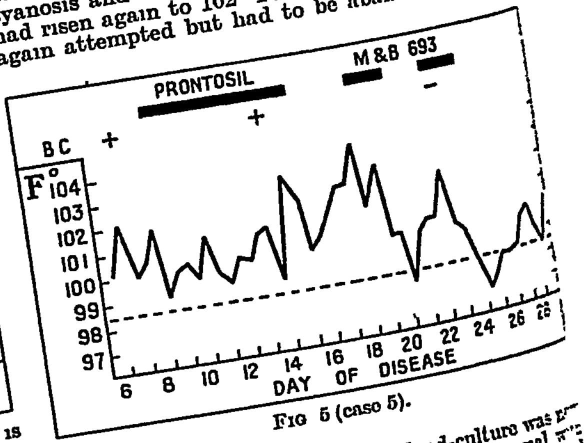

FIG 5 (case 5).

day on account of vomiting. Blood-culture was negative. The temperature fell to subnormal subsequent rises to 100° F., the patient's gen condition began to improve, and he recovered with further complications. (See fig 5)

CASE 6.—Female, aged 51. This patient, mother of case 3, provides a contrast to the preced five cases She was admitted to hospital on t tenth or eleventh day of disease, and it was origin intended that she should serve as a control, when her temperature had remained high for some twenty-six days and she had entered the typhoid state, it was decided that in view of the response in the other cases it was not justifiable to withhold M & B 693 Accordingly on Dec 7, 1938, she was given gr 15 thrice daily

Unfortunately, vomiting became troublesome, but, since the temperature showed the first signs of falling since admission to hospital, administration was continued unaltered until the 14th, when the dose was halved The temperature immediately rose again, but vomiting became so exhausting that prontosil soluble (10 c cm given intramuscularly daily) was substituted for M & B 693 on the 16th The temperature now ranged round 103° F again and did not fall until the 21st, when it reached normal and prontosil was discontinued

All went well until Jan 2, 1939, when there was a relapse. Prontosil album (gr 15 thrice daily) was ordered on the 6th and continued until the 20th, when the temperature fell and, except for a few slight rises, remained normal The patient's general condition improved slowly, but convalescence was protracted (See fig 6)

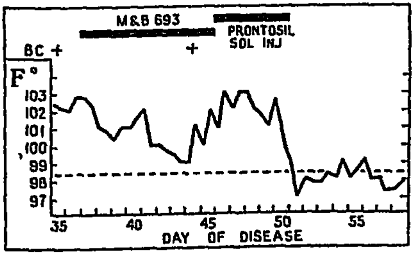

FIG 6 (case 6)—Part of temperature chart is shown beginning with what was approximately the 35th day of disease Unfortunately blood-culture was not repeated on the 51st day Before this the chart showed for 24 days the typical sustained temperature of the fastigium of typhoid fever The patient was admitted to hospital about the 10th or 11th day of the disease On or about the 60th day of the disease a relapse took place, which lasted 18 days and was not controlled with prontosil gr 45 daily by mouth for 11 days Blood-culture on the 7th day of this relapse was negative and no typhoid bacilli were recovered from either stools or urine

CASE 7—Male, aged 47, admitted (ambulant) on April 1, 1939, with a history of headache and nausea for one week and of abdominal pain for three days On admission the mental condition was dull and confused He was very toxic The tongue was heavily furred A moderately profuse crop of rose spots was present upon the abdomen, the spleen was not palpable Temperature 101 6° F, pulse-rate 96, respiration rate 38 The serum agglutinated *B typhosus* H at 1 in 480 Blood-culture was negative, but the urine contained the organism Treatment with M & B 693 was begun on admission (gr 15 thrice daily) During the ensuing three days there was no change in the condition of the patient, who was delirious at night It was decided to double the dose of the drug (gr 15 four-hourly) and to combine it with Felix's Vi-serum Actually the serum (33 c cm concentrated) was injected intramuscularly twenty-four hours before the increased dose of M & B 693 which was maintained for three days and then reduced to the original quantity From April 4—i e, the day the serum was injected—there was a remarkable improvement in the patient's physical and mental condition The temperature fell steadily and had reached normal on the 10th Urine culture was negative on the 6th The organisms were never recovered from the fæces Except for carbuncles, due to *Staphylococcus aureus*, on both cheeks convalescence was uneventful (See fig. 7.)

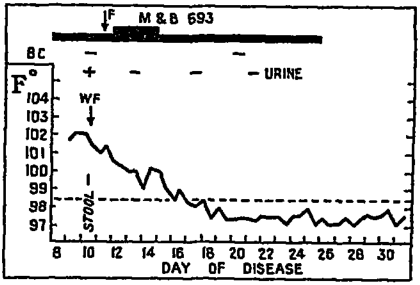

FIG 7 (case 7)—F =Felix's Vi-serum 33 c cm intramuscularly, W F =Weil Felix H positive 1 in 450 (*B typhosus*)

DISCUSSION

It is unnecessary to recount the pathogenesis of enteric fever Clinically, there are two components in the symptom complex—namely, the blood infection (bacteræmia with resultant toxæmia) and the local intestinal disease involving the lymphoid tissues of the small intestine To these may be added in some cases a superimposed infection, streptococcal, pneumococcal, or staphylococcal The relative gravity of each of these components varies from case to case, but any one of them can cause the death of the patient, already exhausted by the effects of the others

With one exception (case 7) the cases here recorded arose as the result of a localised epidemic from a single source Thus the infecting strain was identical All the patients were adults, and all were nursed in separate glass chambers with strict medical asepsis, thus the possibility of reinfection was eliminated. All were admitted when the disease was well established The presence of rose spots in every instance indicated that the disease had passed the first week The attacks were not mild, toxæmia ranged from severe to very severe All recovered Of the 7 patients, 5 were constipated throughout the attack, the maximal number of stools passed in any one day by the remaining 2 patients was four Only 1 of these passed typical pea soup stools The local intestinal disease caused no anxiety in any instance The only superimposed infection was staphylococcal, 1 patient developed, in convalescence facial carbuncles, from which he had also suffered on a previous occasion The outstanding component in our cases was toxæmia Owing to our lack of experience in the use of sulphanilamide in enteric fever and to the fact that leucopenia is a normal finding in these infections, dosage was tentative and cautious In Coxon and Forbes's case[1] agranulocytosis developed Repeated total and differential white cell counts were performed to detect any unusual fall in the granulocytes The lowest count of polymorphs recorded after four days' treatment with M & B 693 was 49 5 per cent The polymorph counts during treatment usually varied from 55 to 60 per cent and no difference in this respect was observed between the two products Prontosil appeared to be better tolerated than M & B 693, the latter, as is well recognised in other conditions, tending to cause nausea and vomiting which, in enteric fever especially, are an obvious drawback.* For this reason the drug was withdrawn in case 6 and prontosil soluble by injection was substituted One patient (case 5) was sensitive to both preparations. Sulphur in any form—e g., eggs in milk or custards—was rigorously excluded from the dietary and from the treatment. There is insufficient evidence in our series to draw any conclusions as to the relative therapeutic superiority of the two preparations.

There can be little doubt that sulphanilamide can exercise a bacteriostatic effect on *B. typhosus* in the blood-stream. The typical relapse in case 2, with its commencing step-ladder rise of temperature, was unquestionably aborted by M & B 693 given on the second day of the rise of temperature Not only was the clinical improvement striking, but also a blood-culture, positive on the first day of the relapse, was negative when repeated on the morning of the fifth day after administration of the drug If it can be confirmed by others that the sulphanilamide drugs will consistently inhibit *B typhosus* in the blood, one of the major problems in the therapy of enteric fever is on the way to solution Our doses were too small in most cases, but even so, and although in some instances there was no striking effect on the temperature, the considerable improvement in the patient's physical and mental condition was obvious to both medical and nursing staffs It seems reasonable to suppose that massive doses for the first two or three days, followed during the succeeding ten days or so by smaller maintenance doses, would produce better results, especially if it were possible to begin treatment during the first week of the disease. It is not suggested that these drugs directly affect toxæmia, but by the inhibition of bacteræmia further toxæmia is indirectly diminished

It is widely believed that blood-culture is likely to be successful only if it is performed in the early days of the disease, but in our series cultures were positive as late as the 44th (approximately), 28th, 18th, and 14th days of the disease Since rose spots constitute one of the manifestations of bacteræmia and may continue to appear in successive crops while pyrexia persists, it is not surprising that late positive blood-cultures are sometimes obtainable. It is significant, as tending to support the evidence for the favourable influence of these drugs on bacteræmia, that after their administration further crops of spots, beyond those noted on admission, either did not appear or were very sparse There is evidence that positive urine cultures may become negative within a few days when these drugs are used (cases 4 and 7), but the data are insufficient to enable us to express any opinion about the fæces.

The most striking result in our series was obtained in case 7 (the last) from a combination of M. & B 693 and a single intramuscular injection of Felix's serum. The patient was an example of ambulant typhoid, and any experienced clinician from the condition on admission would have predicted for him a long and perilous illness Actually he entered the stage of convalescence within ten days of admission, although, as a precaution, the drug was continued for a further week. One case, of course, proves nothing, but it has at least persuaded us that, as in other infections for which both chemotherapy and specific serotherapy are available—e g , pneumonia and cerebrospinal fever—the most promising line of treatment of typhoid fever is likely to be a combination of sulphanilamide and Felix's Vi-serum.

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* The new soluble sodium salt of M & B 693, which is given by injection, seems likely to overcome this objection (Banks, H S , *Lancet*, April 29, 1939, p 983)

Clinical and Laboratory Notes

ESTIMATION OF LUTEAL ACTIVITY AND EARLY DIAGNOSIS OF PREGNANCY

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ALL attempts to recover corpus-luteum hormone from the urine have failed, and in studying amenorrhœa, irregular menstruation, sterility, and habitual abortion luteal function has had to be assessed indirectly by assaying the urine or the blood for gonadotrophic hormones or for œstrin Estimation of gonadotrophic hormone in the urine is of little value for three reasons. (1) often it cannot be detected even in women with normal ovarian function because its excretion may be confined to a single day in the cycle, (2) the amount passed may not be recognisable when diluted in a 24-hour specimen of urine; and (3) at the menopause, when ovarian function is waning or absent, considerable amounts of gonadotrophic hormone may nevertheless be excreted. In the non-pregnant woman the œstrogenic activity of the urine is an almost equally unreliable index of ovarian function, for the ovary is not the only source of œstrin in the body and even if the ovary secretes œstrin this does not mean that it is capable of luteal activity.

The corpus-luteum hormone, progesterone, is not excreted as such but is converted in the body into the glucuronide of pregnanediol In 1935 Venning and Browne isolated from human pregnancy urine sodium pregnanediol glucuronidate, and they have since shown that this substance affords a direct indication of the functional activity of the corpus luteum in the menstrual cycle and in pregnancy. The absence of pregnanediol from the urine during the first half of the menstrual cycle (the follicular or proliferative phase), its presence during the later (luteal) phase and in pregnancy, and its recovery after administration of progesterone to ovariectomised women, clearly demonstrate its significance

This report describes observations on corpus-luteum activity (assessed according to excretion of pregnanediol) in a patient under the care of one of us (E M R) Venning's improved method (1937 and 1938) for extraction of the glucuronidate has been used, and the excretion product has been converted into pregnanediol by the approved formula.

TABLE I—EXCRETION OF PREGNANEDIOL IN MENSTRUAL CYCLE

Stage of cycle	*Pregnanediol* (mg daily)
10th day	0·05
12th and 13th days	2
16th and 17th „	8
18th and 19th „	6
20th and 21st „	14
23rd and 24th „	14

The patient was under investigation for habitual abortion and was first examined for the excretion of pregnanediol in the menstrual cycle Her average cycle lasted 25 days. A single test estimation was made of the combined output of pregnanediol on the 23rd and 24th days of the first cycle studied; the

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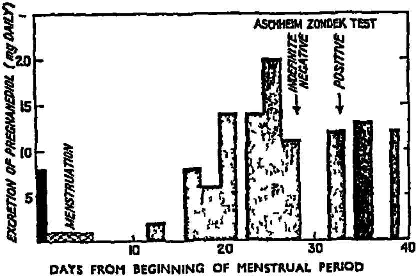
showed an excretion at the rate of 6 mg a day From the 10th day of the next cycle the urine was tested at short intervals, with the results shown in table I and the chart

Venning and Browne (1937a, 1937b), from the output of pregnanediol in about twenty healthy women, estimated that over a period of 11–16 days, which comprised the luteal phase of the menstrual cycle, the total excretion varied from 3 to 55 mg (1937a) or from 3 to 60 mg (1937b) The high daily excretion in our patient on the 20–24th days of the second cycle investigated caused us to suspect pregnancy, and accordingly an estimate of the output for the 15 days was prepared (table II)



Daily excretion of pregnanediol

TABLE II—ESTIMATION OF TOTAL EXCRETION OF PREGNANEDIOL IN MENSTRUAL CYCLE

Stage of cycle	*Pregnanediol* (mg daily)
10th day	Too little powder to test melting point
12th and 13th days	4
14th and 15th "	12 (estimated)
16th and 17th "	16
18th and 19th "	12
20th and 21st "	28
22nd day	14 (estimated)
23rd and 24th "	28
Total	114

The margin between 60 mg (Venning and Browne's maximum) and 114 mg seemed great enough to justify a tentative diagnosis of pregnancy On what corresponded to the 28th day of the cycle (see chart) an Aschheim Zondek test gave an "indefinite negative" result—i e, uterine enlargement developed in two of the five mice used in the test * Five days later—i e, on the 33rd day and therefore approximately eight days after the missed *menstrual period*—a second Aschheim Zondek test gave a clear positive finding that pregnancy existed It was thus possible, by measuring the excretion of pregnanediol to diagnose a pregnancy one day before a menstrual period had been missed and nine days before an Aschheim Zondek test gave a positive result

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* In the pregnancy-diagnosis laboratory such a finding is accepted as suggesting an early pregnancy

BILATERAL EXTRA-UTERINE PREGNANCY

By E M Sewell, M B Edin
MAJOR I.M.S SUPERINTENDENT OF THE GOVERNMENT HEADQUARTERS HOSPITAL BELLARY, SOUTH INDIA

BILATERAL extra uterine pregnancy is sufficiently unusual, and advanced extra uterine gestation sufficiently rare, to merit the report of such a case Instances of both conditions have been recently reported, the former by McIlrath (1937), the latter by Patrick (1937), but I can find no mention of these conditions arising in one and the same patient in the limited literature at my disposal

CASE RECORD

An Indian woman aged 24 was admitted to the Government Headquarters Hospital, Bellary, on April 7, 1938 She complained of dull and constant pain in the lower abdomen for the previous week, accompanied by vaginal bleeding As the woman was of low caste and unintelligent it was difficult to rely on her statements Her periods had always been irregular Some 10 months before admission she had experienced pain in the lower abdomen accompanied by vaginal hæmorrhage which lasted about 15 days Shortly after this she had noticed a swelling in the lower abdomen about the size of a mango and this had slowly enlarged She had had intercourse with her husband 3 months before admission

The patient was anæmic and emaciated Temperature normal, pulse 101, respirations 26 Chest and heart were normal The abdomen only moved slightly with respiration. The abdominal wall was thin and conveyed a generalised resistance to palpation, but at no point was there any rigidity There was widespread tenderness most marked in the left iliac fossa and to a less extent above the symphysis pubis A large tumour was palpable in the right half of the abdomen, extending upwards under the right costal margin and slightly across the middle line The upper part of the tumour was smooth, tense, regularly ovoid and slightly movable, below its outline and mobility were lost in a vague indefinable mass which seemed to fill the whole pelvis from side to side On vaginal examination the vulva was normal and the vaginal mucosa pale The cervix was small, firm, and retracted up behind the symphysis, where it did not appear to be connected with either tumour mass No uterus could be defined The right and posterior fornices were obliterated by a firm, smooth, and fixed tumour The left fornix was occupied by a mass which offered less resistance, but which conveyed a sensation of bogginess to the examining fingers Palpation in this area caused pain. A radiogram showed a fœtus of approximately 30 weeks' gestation lying in the right half of the abdomen above the pelvic brim

Operation—On April 10 I opened the abdomen through a lower mid line incision under spinal anæsthesia The peritoneum was bluish black and rendered 0 25–0 5 in. thick by partly organised and adherent blood clot throughout the extent of the incision. The whole of the right abdomen was taken up by a smooth and tense tumour extending up under the right costal margin and past the middle line to the left The remainder of the cavity was occupied by firm blood-clot extending upwards under the left costal margin and obscuring all other organs from view In the course of removing this clot free bleeding was encountered welling up from the left iliac fossa On clearing away further clot a 2½-months fœtus came into view, followed by the gestation sac, the bleeding being traced to the left tube The uterus small and pale but otherwise normal, next came into view high up behind the symphysis The left tube was clamped and ligated, the left ovary, which was normal, being conserved In dealing with the larger tumour considerable difficulty was experienced in freeing the sides and under-surface from partially organised clot and adhesions to the pelvic wall and colon. It obviously contained a second fœtus, the breech sitting snugly in the right iliac fossa. No trace of the right ovary could be found, which suggested that we were dealing with an ovarian gestation on this side. The tumour together with the right tube were removed en bloc. Further clot from the pouch of Douglas and upper abdomen was removed and the abdomen closed. The gestation sac contained a large dead fœtus, cord and placenta, approximately at the 30th to 32nd week of gestation. For the first 4 days the patient's temperature ranged from 99° to 101·8° F., with a pulse-rate of 92–110. The temperature then remained normal until the eleventh day when it rose to 104° F.; it fell to normal again by the fifteenth day and the patient then had an uninterrupted convalescence, being discharged on May 25. It is probable that the death of the larger fœtus was due to the amount of blood that the mother had lost.

SUMMARY

A case is reported of bilateral extra-uterine pregnancy, that on the right side being of ovarian origin and reaching approximately the 30th or 32nd week of gestation; that on the left being tubal and of some 10 weeks' duration.

I wish to express my thanks to Lieut.-Colonel C M. Plumptre, I.M.S., Superintendent of the Government Hospital for Women and Children, Madras, for including the specimens in the hospital museum.

REFERENCES

McIlrath, M B (1937) *Brit med J.* 2, 1065.
Patrick A. (1937) *Ibid*, p 1156.

REVIEWS AND NOTICES OF BOOKS

Epidemiology in Country Practice

By WILLIAM NORMAN PICKLES, M D. Lond., medical officer of health for Aysgarth rural district. Bristol: John Wright and Sons. 1939. Pp. 110. *7s. 6d.*

FEW doctors working in sparsely populated areas realise the immense value to science of what they encounter in their daily rounds, fewer think it worth while to record it accurately, and still fewer have either the time, the skill, or the energy to publish their observations Practitioners are somewhat frightened by the word "epidemiology," which in their minds is too often connected with mathematical calculations which they do not profess to understand and with vast numbers of cases which their practices can never furnish; so they think their small contributions are of little value. Prof Greenwood's preface to this book should convince them of their error, and the records of Dr. Pickles himself will show what science asks from them and the form in which their observations are most valuable The note on a case of herpes zoster illustrates this well Dr. Pickles may not see a dozen cases of zoster in all his years of practice; yet Dr Pickles's single record is worth more to epidemiology than the thousands of cases which have been casually noted in London in the past ten years The chapters on epidemic jaundice and epidemic myalgia are of particular value, but the whole book should be read by every country doctor.

1. Laboratory Manual of Physiological Chemistry

(4th ed.) By MEYER BODANSKY, professor of pathological chemistry, University of Texas; and MARION FAY, professor of physiological chemistry, Women's Medical College of Pennsylvania. London: Chapman and Hall. 1938 Pp. 295. 10*s*.

2 Practical Physiological Chemistry

For Medical Students. (2nd ed.) By G. M. WISHART, D. P. CUTHBERTSON, and J. W. CHAMBERS. Glasgow: John Smith and Sons. 1938. Pp. 128. 4*s*.

1. THIS is the new edition (the last appeared in 1935) of an excellent book of quite conventional content, written in the interrogatory style which presumably makes the student think for himself. It is suitable for the use of medical students doing their practical work. Besides laboratory exercises it describes a few simple biochemical preparations, and a fairly extensive system of urine and blood analyses. Among the new methods is the Langley and Evans creatinine estimation. The printing is on one side of the paper only.

2. Each of the chapters of this little book has a section on theory as well as directions for practical work. The second edition follows closely the lines of the first. Most of the class experiments described are of a simple type involving only routine apparatus; one or two are more complicated. The details will doubtless be useful to those responsible for arranging and supervising a practical course for students. One or two points call for criticism. In the chapter on proteins and amino-acids there is no mention of the amino-acids containing sulphur or of tests for protein based on the presence of cystine in the molecule It is said on p. 96 that potassium is only partially excreted in the urine. While this is, of course, strictly true it is a statement apt to mislead students, since the paths of its excretion other than the urine are unimportant.

Treatise on the Surgical Technique of Otorhinolaryngology

By GEORGES PORTMANN, professor of otorhinolaryngology at the medical school of the University of Bordeaux. Translated by PIERRE VIOLE, M.D., associate clinical professor in the department of otorhinolaryngology of the University of Southern California. London: Baillière, Tindall and Cox. 1939. Pp. 675. 57*s*.

Prof. Portmann here presents, not a textbook of operative surgery, but an exposition of the technique that he personally employs in operating on the ear, nose and throat. Believing that teaching should strike the eye rather than the ear, he explains the various stages of each operation by full-sized drawings These are numerous and remarkably clear, and only need a brief descriptive text. The instruments and equipment used are illustrated by small-scale photographs of the surgeon's and assistant's tray; a larger illustration of some of the special instruments would be helpful, more especially as a number of them are referred to by names unfamiliar in this country. The indications for operation are mentioned rather shortly in tabular form, but full details are given of the after-treatment and dressings, a most valuable feature There is little or no mention of end-results or of prognosis and this omission is particularly deplorable in the discussion of operations for malignant disease of the fauces; it does not even appear from the text that surgical removal of a cancerous tonsil is not normally curative It would be useful also to learn the results of the operation designed by the author for opening the saccus endolymphaticus in the treatment of Menière's syndrome

Most of the procedures discussed are classical operations, some of which have been modified in points of detail Operations for mastoid disease and its complications are very fully and clearly described, in the operation for petrositis Portmann prefers the paracarotid route of Ramadier to that of Kopetsky and Almour, and illustrates all the stages of the former method In the treatment of stenosis of the nasopharynx he employs a gauze plug, followed by a rubber tube, to keep open the newly formed orifice, a method which has not generally been found efficient For laryngectomy he favours a preliminary very low tracheotomy performed two or three weeks before the major operation, the larynx is removed from below upwards, and a pharyngostomy opening is made as a routine by suturing the mucosa of the gap in the pharynx to the skin in order to avoid the sloughing which often causes pulmonary complications A plastic operation to close the opening into the pharynx is performed a few weeks later, about the same time the tracheal cannula is removed from the tracheotomy opening to the upper end of the trachea and the former is closed by a plastic with double flaps if it fails to close spontaneously

The book is a valuable record of the practice and methods of a surgeon of great experience, translated into English which though not idiomatic is clear and adequate

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Treatment in General Practice

Vol III By various authors London H K Lewis and Co 1939 Pp 402 10s 6d

THIS book contains a further series of the articles on anæsthesia and surgery that originally appeared in the *British Medical Journal* The articles are all written by specialists for the benefit of general practitioners and it is open to question whether this is an entirely unmixed blessing Thus, Dr Helen Lukis in her article on the choice of anæsthetic in general practice seems in doubt whether the general practitioner, apart from gas and oxygen, is to be trusted with any method less primitive than the rag and bottle, advocating either a C_2E_3 mixture followed by ether, or pure chloroform as the bleak alternative in the presence of a naked flame Safe anæsthesia is surely as important to the general practitioner as to the specialist, wherefore it is difficult to understand her penchant for chloroform Many practitioner anæsthetists of experience prefer $A_1C_2E_3$ to C_2E_3 or, better still, to substitute Evipan as the inducing agent Some, again, will be surprised at Mr Lionel Colledge's preference for ethyl chloride and ether as the anæsthetic of choice in the guillotine enucleation of tonsils, for this method is often thought to be more conducive to hæmorrhage than $A_1C_2E_3$ used alone Dr J Blomfield's suggestion that improvement after laparotomy for tuberculous peritonitis may be due to the anæsthetic *inhaled* rather than to the *operation* itself warrants further investigation Mr Norman Lake's note on the care of instruments for minor surgery is useful and practical, while Prof L P Garrod and Mr Geoffrey L Keynes intelligently debunk certain widely held but erroneous notions about the virtues of this or that antiseptic In Mr McNeill Love's note on abrasions no brief is held for the simple and often very effective method of treatment by cleaning the abraded area, applying a mild—and preferably painless—antiseptic, and leaving it exposed to the air so that a hard scab can quickly form The volume includes articles on certain minor disorders of the eye, ear and nose and Mr Hamilton Bailey's article on saline transfusion is so good that he may be forgiven for misquoting his Coleridge

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Les rhumatismes, maladies sociales

By R-J WEISSENBACH physician to the Hôpital Saint Louis, Paris, and technical adviser to the Ministère de la Santé Publique, and FRANÇOIS FRANÇON, physician to the Hospice Thermal Reine Hortense, Aix-les Bains Paris G Doin et Cie 1939 Pp 206 Frs 55

THIS important work is an exhaustive study of the social problems presented by the rheumatic diseases which account for a large part of industrial invalidity. The subject is approached with the critical understanding to be expected from authorities of such high international repute The book may justly be regarded as the offspring of the "Ligue Internationale contre le Rhumatisme," which was founded ten years ago, and under the energetic direction of Dr J van Breemen has already done much to promote the study of the subject Every aspect is here discussed and special attention is given to such preventive measures as can be devised by studying the influence of climate, housing, occupation, and general hygiene on rheumatism Half the volume is devoted to acute rheumatism (maladie de Bouillaud) Information has been obtained from many countries Full credit is given to the work of British doctors, which is too often ignored abroad The publications of the Ministry of Health are freely quoted and the contribution of the special hospitals in this country to the aftercare of rheumatic children is described The second half of the book is devoted to the various forms of chronic rheumatism, articular and non articular, and here again the authors show a knowledge of the publications on the subject in all countries, having obviously taken much pains to sift their material Ætiology and prophylaxis are discussed in great detail, and the various aspects of treatment receive careful attention Statistical and other records from the British Red Cross clinic in London and from institutions of similar character in France, Scandinavia, Russia, the United States, and other countries are compared, and the conclusion is reached that treatment by physical methods and spa treatment in general is of great value in the chronic forms of the disease A special appendix deals with the subject from the point of view of insurance societies and shows how grave is the industrial problem it presents The book will appeal to practitioners interested in rheumatism and to school medical officers, factory surgeons, and others concerned with state medicine

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Yearbook of Obstetrics and Gynecology

By JOSEPH B DE LEE, A M, M D, professor of obstetrics, University of Chicago medical school, and J P GREENHILL, B S, M D, F A C S, professor of obstetrics and gynecology, Loyola University medical school Chicago The Year Book Publishers London: H K Lewis and Co 1938 Pp. 672, 10s 6d

THIS synopsis of the more important publications that have appeared within the year under review is as good as its predecessors and will doubtless receive as enthusiastic a welcome According to custom, the editors insert criticisms or opinions where they think these are called for, and it is noteworthy that they always commend the preservation of the normal and condemn, at times with vigour, advice against conservative measures. The subject matter is arranged in sections, and there are separate indices for subjects and authors Once again we congratulate the editors of this yearbook on providing such an admirable collection of material for the convenience of those who practise obstetrics and gynæcology.

Physiology of Anesthesia

By HENRY K. BEECHER, A.B., A.M., M.D., instructor in anesthesia, Harvard Medical School; anesthetist-in-chief, Massachusetts General Hospital. London: Humphrey Milford, Oxford University Press. 1938. Pp. 388. 17*s.* 6*d.*

THE anæsthetist's duty involves the disturbance of normal mechanisms. In proportion as he deprives his patient of the power of coordination he must assume responsibility for the control of bodily function and by his skilful manipulations must strive to ensure that constancy of internal environment which the patient's reactions are no longer competent to maintain Much of his craft is still empirical, and he would certainly get help from an exposition of the alterations in physiological processes during anæsthesia. This book contains a wealth of information on what could be more correctly termed the pharmacology of anæsthetics The reader who wants to know what happens to the blood-pressure under ether or the blood-sugar under nitrous oxide will find his questions fully answered. He will also find clinical accounts of the stages of anæsthesia under different drugs, and descriptions of the various theories on the action of anæsthetic agents which will mean little to him unless he has a sound knowledge of physical chemistry. What he will not find here, unfortunately, are pictures of the general physiological disturbances in patients at various stages of anæsthesia consequently no light is thrown on his responsibilities for combating such disturbances. In this sense the book fails to justify its title though it tells the anæsthetist much that he needs to know.

Anatomia del Neonato

By FRANCESCO BELLELLI. Naples: G.U.F. "Mussolini" Sezione Editoriale. 1938. Pp. 2[illegible]. L.30.

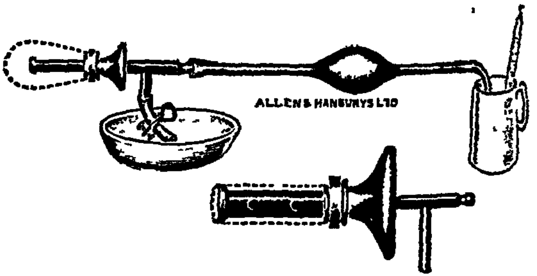
Prof. Bellelli's treatise on the anatomy of the new born is designed as a companion and supplement to manuals of human adult anatomy, for the use of those familiar with the latter subject. The plan of the work is to describe not each organ and tissue in detail but the characteristics which are different in the infantile and the adult stages of development. Each system of the body is dealt with in turn Much information that has been collected with diligence from diverse sources is set out here in compact form, and some is the outcome of the author's own research The value of many of the illustrations is reduced by the low standard of reproduction. There is no index; and the bibliography would be more useful if the references were arranged alphabetically rather than in the order of their appearance in the text

NEW INVENTIONS

VAGINAL HOT-WATER APPLICATOR

THE successful conservative treatment of pelvic inflammation depends in the majority of cases on the efficient use of the hot douche. For those who can afford it, or where the apparatus is available, short-wave diathermy, or the Elliott apparatus, is of course more satisfactory, but in the main the only method of applying heat to the pelvic organ is still the hot douche. This has many disadvantages. The object is to obtain a high intrapelvic temperature over a considerable length of time, and this means a large quantity of douche given in such a manner as gradually to increase the temperature and to distend the vaginal vault so that the heat may be in the closest contact with the inflamed organs In practice it is found that there are few nurses who, without special instruction, give such a long hot douche efficiently, and the temperature of the fluid when it reaches the vagina is often only a few degrees above blood-heat.

The apparatus here shown was evolved to obviate some of the difficulties. It consists of a hollow vulcanite stem with an obturator at one end to occlude the vaginal entrance An ordinary rubber finger-stall is placed on the stem and held in position by a stout rubber band. The external end of the stem is connected to a Higginson's syringe by a short rubber tube The stem is lubricated and inserted into the vagina, the obturator being pressed fairly firmly against the introitus. Water at 105° F. from a container is pumped in, thus distending the finger-stall within the vagina, the amount being gauged by the sensations of the patient, but usually three or four squeezes of the Higginson are enough. This is retained for three minutes—by which time the temperature of the injection has fallen to blood heat—and then emptied through the side tap into a receiver This procedure is repeated twice, and then enough hot water is added to the container to raise the temperature by 5° F. Two more injections are then given, and the temperature again raised by 5° F. In this manner the temperature can be raised to 12[illegible] or 130° F., and kept at that level for as long as may be desired.



The advantages of this method are: (1) the small total quantity of water needed; (2) no bedpan is necessary, and the patient can be treated in comfort either on the back or in the left lateral position, (3) the distended finger-stall is soft and elastic, and fills the vaginal vault as no douche can do; (4) the temperature can be easily and correctly regulated, (5) all the apparatus is convenient to the hand, the vaginal part being self-retaining; (6) the patient can easily be taught to treat herself efficiently.

The instrument has been made for me by Allen and Hanburys Ltd., 48, Wigmore Street, London, W.1

KEITH DUFF, F.R.C.S., M.R.C.O.G.
Gynæcologist to the King George Hospital, Ilford.

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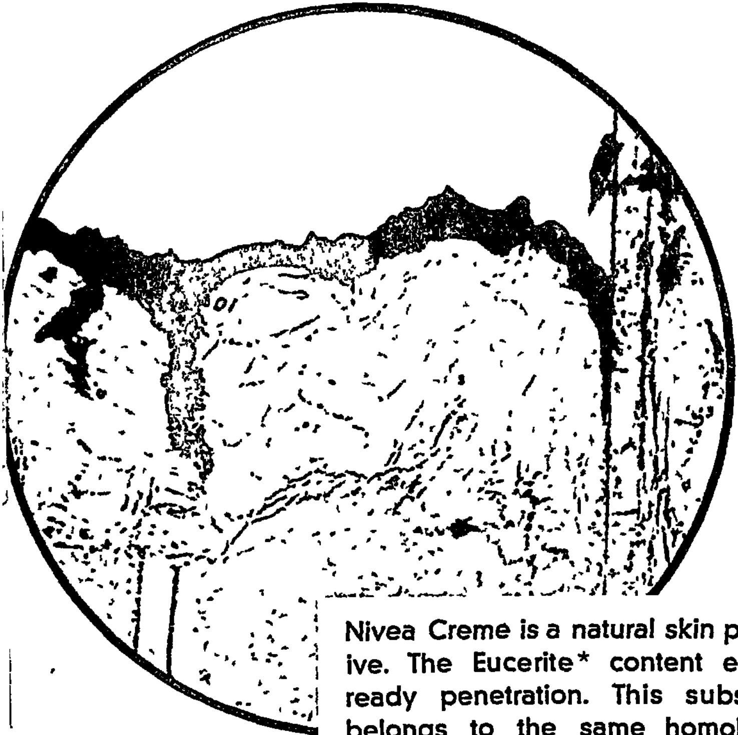

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THE LANCET

LONDON SATURDAY, JUNE 10, 1939

EPILEPSY AND DRIVING LICENCES

ENGLISH law is somewhat tolerant in its attitude owards the motor driver with a history of epilepsy The applicant for a driver's licence has merely to eclare that he does not suffer from epilepsy r from sudden attacks of giddiness or fainting, or rom any defects of movement or control of muscular power, or from any disease or disability, mental or physical, that may cause him to be a anger A person who has at one time had major epilepsy and been cured, or who is still nder treatment with regular doses of sedatives hat have kept him free from fits for some time, may truthfully declare that he does not suffer rom epilepsy His harmlessness as a driver may evertheless be very doubtful

SIR ARTHUR HALL, who contributed to our issue f May 20 a remarkable study of the latter half f the life of an epileptic, observed that in the ase he described a major fit followed fifteen years' ontrol by treatment In such a person neglect o take the controlling drug, or indulgence in even small quantity of alcohol, is likely to produce a major convulsion, and even the cleverest physician annot say with absolute certainty that a given epileptic will never have another fit Dr MONRAD KROHN, the Norwegian expert, leans[1] owards the refusal of a licence to every epileptic, ut admits that there would be hard cases—e g, hat of the person who has had only one or two its, or who has fits only at night, or who has been free for two or three years As he points out, however, a danger of leniency is that many epileptics have no recollection of their fits and may believe hat they have been free when actually they have not A truthful history may depend on the andour of the patient's relatives, and these are not always inclined to be candid Moreover reedom for two or three years does not guarantee perpetual freedom, it is only a hopeful indication hat, if a strict regime of life is followed, no more fits will occur MONRAD KROHN also recognises a risk that an epileptic patient may regard a driving licence as an official recognition of his cure, and may abandon drugs and take to alcohol again The departmental committee of which he was a member proposed to the Norwegian government hat no epileptic should be allowed to be a professional driver, and that driving licences should be ssued to epileptics only on certain stringent conditions these include freedom for at least three years, a promise to continue taking the prescribed drugs and to abstain from alcohol, a recommendation given by a neurologist after physical examination, and regular medical control by an approved physician This committee proposed that epileptic cyclists should come under the same restriction For all these regulations a good case can be made out An immediate obstacle to similar legislation in this country, however, is the absence of statistical evidence that a considerable number of accidents have in fact been caused by drivers being seized with an epileptic attack at the wheel At least one serious disaster of this kind can readily be called to mind, but without comprehensive evidence Parliament would not be likely to consent to further measures

MONRAD-KROHN recognises that doctors are liable to find themselves in a dilemma when they discover in the course of a professional relationship that a patient is an epileptic and has obtained a driving licence under false pretences In these circumstances, he thinks, they should be required by law to report the offence to the police While the doctor cannot be expected, and should not consent, to act as detective, he may well feel himself obliged to give his patient the choice of surrendering his licence and giving up driving, or being reported to the police There are a few situations in which duty to the community overrides duty to the patient, and this is probably one of them

THE ORIGIN OF FIBROIDS

ON another page Prof LIPSCHÜTZ and Dr VARGAS, of Santiago in Chili, summarise the results of experiments that give new and valuable information about the ætiology of fibromyoma of the uterus It will be seen that in guinea-pigs they have been able to produce uterine and extra-uterine fibromyomas by the application of œstrogens, both natural and synthetic The resulting tumours do not possess the property of autonomous growth characteristic of true neoplasms, they require the presence of the growth-exciting œstrogen not only for their appearance but also for their continued existence, and they regress when the application of this hormone is stopped In this respect they differ fundamentally from true neoplasms, whether benign or malignant, in which growth becomes independent of the chemical agent that excites it These experimental fibromyomata are therefore not true neoplasms, but rather hyperplasias so circumscribed and localised that the hyperplastic tissue appears as a tumour Hence LIPSCHÜTZ and VARGAS use the term "tumorigenesis" instead of "carcinogenesis" to describe this phenomenon Their experiments demonstrate in a striking manner that the condition of neoplasia, and especially malignant neoplasia, implies something more than mere growth, it means that the growth is autonomous

The fibromyomata induced in guinea-pigs are clearly the result of an endocrine imbalance, in which œstrogenic hormone is present in excess This raises again the question whether the uterine fibroids found in women may not be due to an endocrine disturbance leading to a similar imbalance—a suggestion already supported by the fact that such tumours rarely appear before puberty or after the menopause and ordinarily become stationary or regress after the menopause or after oophorectomy. It cannot yet be taken for granted that this hypothesis is correct; but if its truth is assumed the rational treatment, especially in the early stages of the disease, would be to restore the normal endocrine balance by administration of hormones that act as physiological antagonists to the œstrogens—for example, progesterone or the thyrotropic hormone of the anterior pituitary.

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[1] Monrad Krohn G H., *Epilepsia*, April, 1939, p. 192

The new experiments also make one think again about the possible dangers of using œstrogens therapeutically. Although these preparations have now been employed in practice for several years no case has as yet been reported, so far as we know, in which their administration has been followed by the appearance of uterine fibroids. Nor has this happening been noted in any of the numerous experiments in which œstrogens have been applied over long periods to other species of animals such as the mouse and the rat Possibly therefore the uterus of the guineapig is particularly sensitive to the action of œstrogens. It is well established that the tissues and organs of different species of animals react very differently to the same chemical tumorigenic or carcinogenic agent. The fact that œstrogens are carcinogenic for the mamma of the mouse but much less carcinogenic for the mamma of the rat has been discussed recently in these columns.[1] Similarly dibenzanthracene and tar are strongly carcinogenic for the skin of the mouse and of the rabbit, but hardly at all carcinogenic for the skin of the two closely related species, the rat and the guineapig. Nevertheless, in view of LIPSCHÜTZ and VARGAS's experiments it will now be necessary to bear in mind the possible development of these tumours in women treated with œstrogens over long periods and to stop the treatment if they appear. If œstrogens are the cause the tumours may then be expected to regress.

RADIOGRAPHY FOR ALL

ON March 18 we drew attention to experiments in mass radiography in Germany, where all military recruits and in certain districts whole populations are having X-ray examinations of their chests. The time and expense involved in chest radiography have hitherto been an insuperable obstacle to large-scale examinations, but both these difficulties have been overcome by using a fluoroscopic screen and taking miniature photographs of the screen image The idea is neither new nor German, and indeed was considered in this country and America within a few months of RONTGEN's discovery. The fundamental principles are simple and are described in our present issue by Dr. DORMER and Mr. COLLENDER, who have devised apparatus that they find satisfactory. A more comprehensive survey has lately been made by JANKER,[2] who is largely responsible for the remarkable progress made in Germany, and the methods employed by these workers differ only in their details.

The essentials are a camera with a wide aperture lens, a bright fine-grain fluoroscopic screen, and a fast fine-grain film. The fluoroscopic screen can be energised by any reasonably modern radiographic equipment. DORMER and COLLENDER use a small rotating anode tube, and as there is clearly a limit to the number of exposures in rapid succession that can be made by one X-ray tube without overheating, they recommend the immersion of the tube in circulating oil. JANKER gets over the difficulty by mounting two tubes on the same pillar, as soon as one gets hot it is swung out of the way and the second comes into action The method is simpler, and in the long run probably cheaper.

There is no longer any doubt as to the relative value in routine medical examination of chest radiography and a quick examination with the stethoscope, and the rapidity and cheapness of the new radiographic technique make it ideal for the examination of large groups of school-children and factory and office workers Miniature radiograms are more reliable than routine screen examinations, which leave no record and rely too much on the personal factor. They are also more accurate than full-size paper radiograms, for less detail is lost by reduction than by the coarse grain of paper. The method clearly has great possibilities in the ascertainment of tuberculosis, and from this point of view alone there seems every reason for adopting it as a routine in the examination of recruits for the militia The medical boards, which began work in many districts on June 8, will have authority to obtain a specialist opinion in any case where there is a suspicion of tuberculosis, and a radiogram of each recruit would much simplify the task of deciding on when this should be done. Routine radiography cannot now be applied to the first batch of recruits, but the necessary apparatus and personnel could soon be made available Perhaps before long a miniature radiogram will be part of every recruit's health dossier; its value, both in the diagnosis of elimination of present abnormalities and the elucidation of future developments, would be great.

PRIMARY PERITONITIS IN CHILDREN

PRIMARY peritonitis, whether streptococcal or pneumococcal, has always presented great difficulties both in diagnosis and treatment. The streptococcal form, which BANKS[1] has lately described as "a rare and very fatal condition," tends to affect quite young children, and the patient may be moribund within twenty-four hours of the onset. The source of infection has been much debated, but the peritonitis is probably most often the result of septicæmia. In newborn babies the umbilicus suggests itself as a likely portal of entry for organisms, and in a recent outbreak in a maternity hospital described by Cr

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1. *Lancet*, March 11, 1939, p 581.
2 Janker, R., Leuchtschirmphotographie Röntgenreihenuntersuchung Leipzig Johann Barth 1938 Pp 57 R.M 9 60

1. Banks, H. S, *Lancet*, April 29, 1939, p. 937

FORD and STENT,[2] in which 4 infants were taken ill and all died, this was assumed to be the mode of infection The streptococcus responsible was of type 28, and the same strain was found in the throat and nose of a nurse who had begun duty in the maternity ward two days before the first child died A preceding infection of the upper respiratory tract has been a feature of some of the cases on record, while in a series described by NEWELL[3] of Tennessee 8 fatal cases were associated with erysipelas

The reported greater incidence of pneumococcal peritonitis in little girls than in little boys led McCARTNEY and FRASER[4] to suggest that the infection enters through the genital tract This view is supported by WILLIAMS[5] and by the earlier work of CANDOLIN,[6] but in 36 cases treated during the last twenty five years in Harriet Lane Home for Children at Johns Hopkins Hospital NEWELL found a slight preponderance of males His series contains an important group, consisting of 11 males and 5 females, in which nephrosis is said to have been the predisposing cause In such cases pneumococcal peritonitis seems to be a recurring illness and the children may eventually die either from the nephrosis or from the peritonitis The immediate mortality from the peritonitis is very high—NEWELL gives it as nearly 70 per cent compared with 50 per cent in the cases not associated with nephrosis He found, however, that on the whole pneumococcal peritonitis was not as deadly as streptococcal peritonitis, for of 25 streptococcal cases in the same twenty-five-year period 23 died, whereas of the 36 pneumococcal cases 22 died Streptococcal peritonitis arose at a considerably earlier age, 18 of the 25 cases being in the first six months of life, whereas the pneumococcal group was evenly distributed between the first and tenth years Abdominal pain seems to have been much more severe in the pneumococcal infections Other important symptoms were loss of appetite with nausea and persistent vomiting, fever and diarrhœa were also common In the babies with streptococcal infection the principal symptoms, in order of frequency, were vomiting, diarrhœa and abdominal pain, the clinical picture being that of an acutely ill child, often moribund, with a distended abdomen Local tenderness and muscle guarding and rigidity are often surprisingly slight in primary peritonitis

As to whether anything is gained by abdominal section in cases of primary peritonitis, NEWELL thinks that early laparotomy with drainage is of definite value in selected cases if the organism is a pneumococcus but useless if it is a streptococcus He of course recommends late drainage of localised collections of pus in the peritoneum, if the child survives to localise the infection, and laparotomy is often done perforce to establish the diagnosis, for it may well be unsafe to discard completely the possibility of an abdominal focus such as appendicitis as a cause for the peritonitis Thus surgery cannot offer very much, and it is fortunate that alternative medical methods are now available NEWELL has obtained a cure in 2 cases of pneumococcal peritonitis by giving massive doses of antipneumococcal rabbit serum, while both NEWELL and BANKS report single successes with chemotherapy in extremely ill children suffering from streptococcal peritonitis In BANKS's case the best result followed injections of the soluble sodium salt of M. & B 693, sulphanilamide had been previously tried and was badly tolerated NEWELL's child received two intraperitoneal injections of sulphanilamide (30 c cm of a 1 per cent solution) on consecutive days and subcutaneous injections of a 1 per cent solution twice daily for five consecutive days, the average subcutaneous dose being 0 4 g So far as youthfulness goes, this child, who was only two months old, is said to hold the American record for recovery from a primary streptococcal peritonitis

THE CONSUMPTION OF SUGAR

IN its report on the physiological bases of nutrition the Technical Commission of the Health Committee of the League of Nations "regarded with concern the increasing habit in certain countries of large sugar consumption" The indiscriminate use of such a source of energy without other nutritive value tended, in its view, to lessen the amount of "protective" foods in the diet The scale of the change as regards sugar, whether for good or ill, has certainly been enormous in many countries of Western civilisation Until the eighteenth century cane sugar was a costly luxury in Europe, and in 1700 only 10,000 tons were used in Great Britain With the increasing consumption of tea and coffee imports then increased dramatically, the figure for *Great Britain being 150,000 tons in 1600 and nearly* 1,100,000 tons in 1885 According to statistics compiled from official sources by Prof Ichok[1] of Paris, the consumption of sugar in France has increased nearly tenfold in the space of a century A hundred years ago the average was only 2-3 kg per person per annum, today it is 22-23 kg On the English scale the average was about 1½–2½ oz per head per week in the decade 1830–40, in the third quarter of the nineteenth century it had become 4–6 oz, at the turn of the century it had further risen to 9–10 oz; and in the last few years it has reached nearly 1 lb per person per week, at which level it has remained fairly stable Ichok clearly does not regard this amount as excessive and would, indeed, like to see it increased It is still considerably below the figures given for the United Kingdom in the first report of the Ministry of Health's Advisory Committee on Nutrition—namely, 1¾ lb per head per week in the five years immediately before the late war, *rising to 1¾ lb in 1934–35*

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[1] Ichok G *Paris Méd.* May 20, 1939 p 1

POSTGRADUATE COURSES IN GERMANY—International postgraduate courses in the various specialties will be held in Berlin Vienna Hamburg, Cologne, Munich, and other medical centres during the summer, Further particulars may be had from the bureau of the Berliner Akademie für ärztliche Fortbildung Robert Koch Platz 7 Berlin N W 7

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[2] Crawford G J, and Stent, L, *J Obstet Gynae* April, 1939 p 309

[3] Newell, E T *Surg Obstet Gynec* April, 1939 p 760

[4] McCartney, J E, and Fraser J, *Brit J Surg* 1922 9, 479

[5] Williams H, *Med J Aust* April 1 1939 p 506

[6] Candolin, Y, *Acta chir scand* 1935 76, suppl 34

ANNOTATIONS

SUCCESS AND FAILURE

DURING last year 746 medical families were helped by the Royal Medical Benevolent Fund. This fund, it will be remembered, gathers money inside the medical profession for the relief of its distressed members, and their wives, widows and children. During the year there were 127 new applications for such help, and it is hardly likely that this covers the whole of the need, for pride often forbids the necessary approach through a subscriber and some may dread inquiry by a case committee. Against this we must remember that the incidence of serious need is relatively low among members of the medical profession; there were at the end of last year 61,420 names on the Medical Register, and a medical education is so satisfactory an insurance that the proportion who are in financial distress when their professional activity is over is put at only 1–2 per cent. In a sense therefore the report issued by the fund to its subscribers is a record of success rather than of failure, and it contains 183 closely printed pages of the names of medical men and women who have found themselves able to contribute, most of them year by year, to the relief of their less successful colleagues. In these days of providence and insurance it should be noted that the subscriber to this fund gains no personal advantage whatever, for assistance is given without regard to previous subscriptions. On the other hand, it is so much more blessed to give than to receive that one wonders whether many of the fund's supporters, if they gave further thought to the matter, might not wish to increase their blessedness. There are several thousand names on the list, and it should be scanned with particular care by those whose names are not there—although the absence of a name does not mean that no contribution is made to the fund, for the alphabetical list only accounts for some £9000 of the total £13,000 that comes in from medical societies, associations, masonic lodges and other benevolent groups. The secretariat is right in publishing where possible the names of those who give and not those who receive—those of us who are on the crest, not in the trough, of the wave. But Sir D'Arcy Power in a leaflet adds six examples of misfortune which are more than sufficient to move any but the stoniest hearts. In spite of the arduous life lived by many of the subscribers they mostly have a margin of time in which to enjoy the comforts of life. The grants made by the fund cannot provide comfort, but only relief and maintenance. Fortunately, however, happiness is often a by-product of kindness.

ANÆMIA IN JUVENILE RHEUMATISM

Hayem's observations last century on anæmia in acute rheumatic fever have been overshadowed in recent times by observations on the sedimentation of the red blood-cells. Gezelius[1] writes of the significance of the anæmia not only in itself but in conjunction with the sedimentation-rate. He has studied the blood changes in 31 cases of acute rheumatism between the ages of seven and fifteen in the children's hospital in Gothenburg, and reports that when anæmia was present its degree bore a direct relation to the alteration in the sedimentation-rate. The higher the sedimentation-rate the greater the anæmia. The anæmia disappeared when the sedimentation-rate fell to normal, both changes showing that healing was in progress and nearing completion. When attempts were made to hurry the cure of the anæmia by the administration of iron no improvement could be obtained unless the general condition was also improving; in other words, if anæmia diminished after iron the sedimentation-rate was found to have fallen also, suggesting that it was a lessening of rheumatic activity, rather than the administration of iron, that had led to cure of the anæmia. Incidentally this observation is held to support the view that the anæmia of rheumatic fever is erythronoclastic or hæmolytic in type, which agrees with the finding of a high reticulocyte-count at the height of the anæmia and the presence of urobilin and urobilinogen. But the most important information provided by Gezelius's study concerns the effect of intercurrent infections upon the sedimentation-rate. Acute infections of the upper respiratory tract, enteritis and pyelitis are given as examples of disorders in which the sedimentation-rate was increased without any corresponding change in the red-cell count. Moreover tonsillectomy may be followed by a rise in the sedimentation-rate which may cause alarm as possibly presaging a relapse of rheumatic infection; but if this is not associated with an increase in the anæmia the rise is not as serious as it seems. Gezelius thus gives reason for thinking that simultaneous estimation of the sedimentation-rate and the number of red cells is of greater value than either observation made alone.

THE PELVIS IN PREGNANCY

IN a short paper[1] Dr Carl Hartman has at last published his findings on the loosening of the pelvic ligaments in rhesus and bonnet monkeys. The data given are meagre, but definite. Apparently the only joint studied has been the symphysis pubis, and the only change noted has been œdema. The method of testing is to place the animal on its belly and spread outwards the ischial tuberosities. The degree of movement can be measured. It seems likely that the sacro-iliac joints are also involved, thus mobilising the pelvis as a whole. In terms of the physiological result, which must be to facilitate parturition, this brings monkeys in line with some lower animals, and, according to authorities cited by Hartman, with man. In terms of the physiological process involved, however, the change is less easy to describe, for it seems to differ in different animals. In the mouse and guineapig actual absorption of the pubic bones takes place at a rapid rate, connective tissue (which in the mouse may be a ligament 3 mm. in length) taking the place of the joint. Hartman states that the relaxation in monkeys persists after death of the fœtus, and this is consistent with the uninterrupted absorption Newton and Lits[2] found in mice after the fœtuses had been removed. The simulation of continued pregnancy may be attributed to the surviving placenta. Hartman also says that relaxation occurs as usual after oöphorectomy, but Newton and Lits found that this operation in mice arrested pubic absorption and that abortion was very difficult to avoid. This may mean that whereas in some lower animals the placenta merely controls the ovary, in primates it takes over ovarian function completely. On the other hand it is possible that the relaxation in primates, accompanied by little structural transformation, is physiologically different from

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1. Gezelius, G, *Acta pædiatr, Stockh* 1939, 23, 361

1 Hartman, C G, and Straus, W. L., jun, *Amer J Obstet Gynec* March, 1939, p 498

2 Newton, W H, and Lits, F J, *Anat Rec* 1938, 72, 3

rofound changes noted in mice and guineapigs Vhen Hisaw and his colleagues[3] first put forward heir claims for a special luteal hormone "relaxin" hey stressed the occurrence of relaxation as distinct rom absorption in the pelvic joints The subject is omplicated, and made more interesting, by the fact hat œstrogen will in time cause absorption of the ymphysis pubis of the non pregnant mouse[4] and uineapig and may therefore be partly responsible or the process in pregnancy, though in this condition he change is much more rapid The work of Villard Allen, Robson and others[5] on maintenance f the corpus luteum by œstrogen suggests yet nother route through which œstrogen might act t is not yet clear whether the paradoxical deposition f bone in the long bones which accompanies experi nental "œstrogenic" pelvic absorption also takes lace in pregnancy

AUGUST BIER AS A PIONEER

The inclusion of the bust of August Bier among the pioneers of surgery whose work has entitled them to a place in the lecture room of the University Surgical Hospital in Berlin was made the occasion of an address by Prof Paul Rostock[6] He reminded his audience of a day, exactly seven years earlier, when Bier delivered his valedictory address in the same room Tracing the most notable features of Bier's career, the speaker dwelt at some length on the part he played in exploiting hyperæmia of different structures as a therapeutic measure *Bier's passive congestion, of* which so much was heard at the end of last century, had, in the speaker's opinion, become a well established principle familiar to the layman as well as to the doctor In his treatment of surgical tuberculosis, of the bones and joints in particular, Bier emphasised the importance of the general health and consistently opposed the tendency common some decades ago to restrict attention to the local manifestations of tuberculosis By the success with which he treated tuberculosis on conservative lines in the *lowlands* he did much to dispel the dogma that an Alpine climate possessed therapeutic properties denied to localities below a certain altitude Towards the end of the 'nineties he became engrossed in the problems of anæsthesia for operations, and he diligently sought some ideal anæsthetic acting through the vascular system His vein anæsthesia did not, however, prove successful, whereas his lumbar anæsthesia has proved an important advance in this field. It was characteristic of Bier that, in working out the technique of this procedure, he experimented first on himself In coöperation with Hugo Schulz, the pharmacologist, Bier had the courage to flirt with the principles of homœopathy, having satisfied himself that dosage may be the determining factor in exciting or allaying various morbid manifestations He was one of the earliest patrons of modern blood-transfusion and he experimented with the injection of blood derived from creatures other than man Studying the problems of the regeneration of tissues he found himself more and more *interested* in the glands of internal secretion and the possibilities of their scientific exploitation In his later years he did much to promote physical exercises for both the sick and well, and he was the first rector of a high school devoted to this end In spite of all these engrossing practical interests, Bier found time to hark back constantly to a study of the greatest of his teachers—Hippocrates

INCLUSION BODIES DUE TO BURNS

Although one thinks of inclusion bodies as chiefly related to virus diseases, they may be found in conditions in which there is no reason to assume the presence of a virus An example of this is described by Belt,[1] who in 1932 assisted the late Prof Oscar Klotz in investigating the histology of the liver in yellow fever At that time they observed certain cytological changes which they regarded as distinctive of yellow fever, and it was not until two years after the publication of their paper that they encountered a case of fatal burns in which the liver changes were almost identical with what they had found in yellow fever Belt has now collected three other cases of fatal burning showing the same appearances The post mortem findings were similar in all four cases The livers were enlarged and pale yellow, with an extensive mid zonal necrosis Histologically there were cytoplasmic inclusions of the "Councilman body" type, together with many nuclear inclusions of the type described as class A by Cowdry It has been debated whether or not inclusion bodies represent virus products, and Belt remarks that Klotz held the view that the nuclear inclusions were more like a chromatin degeneration *Their discovery as a concomitant of burns seems to* support this idea

HEALTH OF ICELAND

A 186 page report on public health in Iceland is published in Icelandic, but a concession is made to readers unfamiliar with this language in an English summary *running to* five pages *Of the total popula*tion of 116,880 at the end of 1936, 35,300 lived in Reykjavik It is a serious study of epidemiological problems in a community which, as we have had occasion before to point out, is self contained to an unusual degree With approximately one third of its population concentrated in a single town, Iceland has been faced with public health problems at once urban and *rural* In 1935 epidemic diseases were rife and were largely responsible for the unusually high death rate of 12 2 per 1000 in 1936 the death-rate was down to 10 8 Apart from measles, which ran through the whole country in 1936, the only infectious disease attracting special attention that year was enteric fever in an island with about 100 inhabitants The disease having become endemic, a bacteriological investigation was carried out, and in due course a carrier was discovered and the necessary steps were taken for the prevention of further infection The notification of venereal diseases revealed 632 cases of gonorrhœa (as compared with 372 in 1932) but only 16 cases of syphilis and 1 of soft sore While in 1927 the deaths from all forms of tuberculosis numbered 206, the corresponding figure for 1936 was only 157 In spite of this decline, tuberculosis came numerically *second* in the list of causes of death, "old age" alone providing a greater number of deaths (196) Third in the list came malignant growths with 149 deaths Diseases of the heart, pneumonia, apoplexy, accidents, measles, premature birth and debility of newborn, and nephritis were of numerical importance in the order given Leprosy and hydatid disease—familiar scourges in Iceland—continued to decline, only 25 lepers being still alive in the country, and the number of cases of hydatid disease fell from 46 in 1927 to 11 in 1936. During this year 32 abortions were induced under the terms of the Birth Control Act which came into operation in 1935. Breast-feeding was so universal that only 1·2 per cent of the Reykjavik babies were exclusively bottle-fed. The proportion of bottle-fed to breast-fed babies was, however, somewhat higher in the country as a whole The total number of doctors in Iceland in 1936 was 140, while 205 midwives were in active service. Dentists are rare, and trained nurses do little work outside the hospitals, of which there were 43 with 1140 beds, or 9·8 beds per 1000 inhabitants. Of these hospitals, 35 were general, with 641 beds. The tuberculosis sanatoriums contained 284 beds.

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[3] Fevold H L Hisaw, F L and Meyer R K *Proc Soc exp Biol*, N Y 1930 27 604

[4] Gardner, W U *Amer J Anat* 1936 59 459

[5] Allen, W M *Cold Spring Harbor Symposia on Quantitative Biology* 1937 vol v p 66 Robson J M *J Physiol* 1937, 90 435 Westman, A, and Jacobsohn D *Acta obstet gynec scand* 1937, 17 13

[6] Rostock P, *Münch med Wschr* April 7 1939 p 521

[1] Belt T J *J Path Bact* Mar 1939 p 493

YOUR CHEST SHOULD BE FLAT

FORTY years ago Dr. Woods Hutchinson, in his "Studies in Human and Comparative Pathology," corrected the common misapprehension that the tuberculous chest was as flat as it looked. He found by measurement that it was, in actual fact, rounder than the healthy chest, so round indeed that the scapulæ, aided by the accompanying poor muscle tone, had difficulty in resting on the back of the thorax and tended to slip forward, giving the typical but misleading effect of a flat chest. He found, moreover, in comparing structural development at different ages, that the thorax is normally round at birth, and alters gradually to the broader, flatter chest of the healthy adult. The thorax of animals, in order to allow closer approximation and free movement of the forelegs, is deep and rounded—in the dog, for example, the ratio of depth to width is 3 : 2—and the chest of the four-months human embryo is much the same shape. Structurally, therefore, the tuberculous chest seems to be one of arrested development. Dr. Weisman[1] now takes up the matter from this point. From measurements of 20,000 school-children, and vital-capacity tests of 500, he confirms that as the child gets older the thorax becomes progressively broader and flatter, with a decrease of thoracic index relative to growth, height and weight, and an accompanying increase of vital capacity. He then gives his own figures, as well as those of other investigators, for measurements of tuberculous chests, and shows that these are deeper and underdeveloped, having a higher thoracic index and a lower vital capacity. The measurements of the chests of 40 patients who were non-tuberculous but suffered from chest complaints such as bronchitis and asthma fall between the tuberculous and normal Differences of race and nationality do not affect the general findings, but where environment is such that growth becomes stunted or weakly the round and immature thorax is far more common than where living conditions are good The social implications of these facts are clear. Weisman's aim is to attract attention to a logical and fundamental prophylaxis of tuberculosis by ensuring nutrition and social conditions for children compatible with normal healthy growth When development in childhood is poor it should be hastened, he says, not only by improved general conditions but by specific exercises The forms of activity that, through evolution, have gradually changed the shape of the thorax from the quadruped to the apes, and finally to the upright structure, are climbing and wide free arm movements Similar exercises—ball-games, climbing and apparatus work—Weisman maintains will ensure correct development, and he has advocated, with benefit, a change-over to this type of activity in any schools where standing rhythmic exercises have altogether superseded apparatus work. His book may do much towards preparing the soil for health, and may also rouse the social conscience to an appreciation of increased resistance in preference to the sanatorium cure. His title, however, is provocative rather than accurate: the better slogan would be "Your chest should be broad."

FEES FOR MEDICAL REPORTS

THE medical practitioner must often have heard the wise advice that before he gives a report to solicitors, he should require a guarantee that an adequate fee will be paid him. Once the report has been given, the vantage ground for negotiating for fees is lost. The practitioner should either obtain the fee before giving the report or else should get a written undertaking from the solicitors that they will be responsible for the fee Even when this is done, the practitioner may not be at the end of his difficulties. In a recent case solicitors who had made themselves responsible for the fee attempted to repudiate the liability on the ground that the report was of no use to them The practitioner consulted the London and Counties Medical Protection Society of which he was a member. Proceedings were taken against the solicitors in the county court and judgment was entered in the practitioner's favour for his fee and the costs of the claim.

The facts of the case were simple. The solicitors were apparently engaged in litigation on behalf of a patient with a history of mental instability against whom some allegation of insanity had been made. They asked the doctor to report upon the patient and to deal in particular with his previous medical history and that of his family. There was no difficulty over professional secrecy. The patient gave his written consent to the report being made; indeed he himself had suggested to the solicitors that they should apply to the doctor for the information. The doctor, as it happened, had not seen the patient for six years. This fact was well known to the patient; it did not vitiate the value of the doctor's knowledge of the medical history of the patient and his family. It gave the solicitors, however, an excuse for declining to pay the doctor's fee. If they had known, they said, that the doctor had not seen the patient for six years, they would never have asked him for a report As already mentioned, the county court judge decided that the fee must be paid If a potential witness were to be rewarded according to the hopes or disappointments engendered by his prospective evidence, an uncomfortably speculative element would be introduced into the relations between medicine and the law. A simpler principle was involved—namely, that professional men should keep their word. To give them their due, they generally do.

GROWTH HORMONES IN INSECTS

IT has long been known that growth in vertebrate animals is largely controlled by hormones circulating in the blood. Only of late years has it been discovered that growth in insects is similarly regulated Caterpillars that have finished feeding will not turn into pupæ if their brain is removed, but they will do so if the brain is reimplanted in the abdomen. Apparently the brain secretes a growth-promoting hormone

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[1] Your Chest Should be Flat By S A Weisman, M D, F.A C P, assistant professor of medicine, University of Minnesota London: J. B Lippincott Co 1938 Pp 145 9s

DOCTORS' LIBRARY.

The maggots of blow flies will not pupate if a small gland close to the brain is excised, and a certain strain of drosophila suffers from a hereditary defect in this gland so that the larvæ grow very large but never become pupæ. They can be induced to pupate if glands from normal larvæ are implanted in them. Recently active extracts of some of these hormones have been prepared and it has been found that extracts from full grown caterpillars will cause fly maggots to pupate. More striking perhaps are the effects of a little gland, the so called corpus allatum, lying close to the brain, in controlling the metamorphosis of insects. If this gland is transplanted from young blood sucking bugs (rhodnius) into older individuals that are about to undergo metamorphosis to the adult form, they will continue to grow and yet retain their juvenile characteristics. If the corresponding gland is removed from young silkworms they will turn into tiny pupæ. When it is taken out from young stick insects they will begin laying little eggs before they are full grown and these develop parthenogenetically to give rise to little larvæ not more than half the normal size. Quite lately it has been found that the process of metamorphosis may be reversed. Adult bugs that have undergone metamorphosis may be caused to grow again and their skin may resume some of the characters of the earlier stages. And portions of pupæ implanted into caterpillars develop once more a caterpillar skin. So far only the gross results of the actions of these hormones have been studied[1], but it is to be hoped that before long, since insects have a simpler organisation than vertebrates, it may be possible by studying them to obtain a deeper insight into the mode of action of growth regulating hormones in general.

FOG AND FILTHY AIR

BRITAIN is steadily becoming less foggy, according to the annual report on atmospheric pollution issued by the Department of Scientific and Industrial Research.[2] If this improvement continues it may well have an appreciable effect on health, for, though clean fogs are probably no more than a source of serious inconvenience, dirty fogs, especially when they are combined with intense cold, are a menace because of the respiratory irritants they contain, and may even be disastrous, as was the fog in the Meuse valley in 1930.[3]

Clean fogs are made up of water droplets formed by the condensation of water vapour from approximately saturated air on hygroscopic particles—so called Aitken nuclei. These nuclei may be composed of sea salt, or, as J H Coste and H L Wright have shown, in towns, of nitrous or sulphuric acid. The white fogs of early morning, which are common inland after cloudless and calm nights, are due to cooling of the earth by radiation, and are usually soon dispersed by the warmth of the sun. The more persistent fogs, such as delayed the *Empress of Australia* in the North Atlantic, are caused by the cooling of moist air from the south by air or water from the polar regions. Water fogs of this kind consist of relatively large droplets, through which the sun, if it is visible at all, looks white.

The fogs characteristic of large towns are of a different character, though they are often associated with water fogs. Under normal conditions the temperature of the air falls about 1° F for each 300 ft of height. This "lapse rate" is interfered with by water fogs, which produce a temperature inversion, so that the upper surface of the fog may be some degrees warmer than the lower part. The waste gases and soot from chimneys then rise through the cooler air, losing heat as they do so, until they reach the ceiling of warm air, where they spread out into a sooty pall. If conditions are favourable the pall gradually thickens downwards by the outpouring of more smoke until the fog extends from the ceiling to the ground. The sooty particles are small and scatter the light of short wave-length, so the sun looks red or yellow through these town fogs and their colour is brown or black. A temperature inversion unaccompanied by water fog may lead to darkness overhead with fair visibility below, a state of affairs that seems to be becoming commoner in London and may depend in some way on the replacement of cold green fields by warm suburbs.

Many more or less unpractical schemes have been devised for dissipating fogs in aerodromes, shunting yards, and even in London streets, but Prof David Brunt[4] thinks that only two methods are worthy of serious consideration. The first is the chemical one of spraying the air with such hygroscopic substances as a saturated solution of calcium chloride. The second consists of warming the air by gas or paraffin burners. Of these Prof Brunt favours the second, and although the fuel required to clear an aerodrome would be considerable, he does not think its cost would be prohibitive.

INOCULATION AGAINST WHOOPING COUGH

ALTHOUGH attention has been focused sharply on pertussis in the last few years, the disease still exacts a huge toll of infant life and is still responsible for much invalidity from respiratory and other sequelæ. Earlier diagnosis and treatment, particularly hospital treatment, will no doubt lessen the dangers of the established disease, but no single measure of control offers so much hope for the future as vaccine prophylaxis.

Past experiments in vaccination have not been uniformly successful. In spite of frequent warnings as to the general uselessness of vaccines prepared from rough strains, Lawson[5] still attributes most of the failures to this cause. He found that the survival rate of mice protected against artificially induced pertussis pneumonia by a vaccine composed of rough phase organisms was no higher than that of control animals who received no vaccine—about 7 per cent.—whereas 25 out of 28 mice survived if protected by a smooth phase vaccine. In another experiment he compared this smooth phase vaccine with three commercial vaccines prepared from ascitic fluid agar, from Bordet Gengou medium, and by the mechanical disruption of smooth phase organisms (pertussis endo antigen). The results were overwhelmingly in favour of the original vaccine, which gave a survival rate of over 70 per cent., whereas the vaccine prepared from ascitic fluid agar and the pertussis endo antigen afforded little or no protection. The Bordet Gengou medium vaccine, which presumably contained smooth phase organisms, gave a survival rate of only slightly over 50 per cent. Lawson also showed that in mice there is a rough correlation between the dosage of vaccine and the degree of protection achieved.

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[1] Bounhiol, *Bull biol* 1938, suppl 24. Piepho, *Naturwissenschaften* 1939 27 301. Plagge E, *Forsch Fortschr dtsch Wiss* May 1, 1939 p 175. Wigglesworth V B *Naturwissenschaften*, 1939 27 301.

[2] Department of Scientific and Industrial Research. The Investigation of Atmospheric Pollution 24th Report. London H M Stationery Office. Pp 117 2s.

[3] See *Lancet* 1931 1 302.

[4] Brunt D, *J sci Instrum* Mar, 1939 p 137.

[5] Lawson, G McL *Amer J Hyg* May 1939 p 119.

There seems to be no doubt as to the necessity of employing smooth-phase vaccines in pertussis prophylaxis, but Lawson's experiment does not support mechanical disruption of the bacillary body as advocated by Krueger, Nichols and Frawley.[6] Further evidence is required before correct dosage and optimum interval between injections can be determined. There are, in addition, many other variables to be taken into account before successful results in the laboratory can be applied to human prophylaxis, not the least being the comparatively low infectivity of pertussis under natural conditions. A large scale experiment in pertussis prevention undertaken by Kendrick and Eldering[7] in Grand Rapids is therefore particularly welcome. Here 5815 children were investigated, due allowance being made for seasonal and other variations by extending the observations over a consecutive period of forty-four months. The vaccine used, which contained 10,000 million smooth-phase H. pertussis per c.cm., was given subcutaneously in doses of 1 c.cm., 1·5 c.cm., 1·5 c.cm. and 3 c.cm. at weekly intervals. It is a comforting thought for future investigators that in the 9075 separate injections necessitated by this experiment only 3 severe systemic reactions were recorded, though slight to moderate local reactions were usual. Only presumed susceptible children were accepted for the experiment, the age-limits being eight months to four years—i.e., up to but not including the fifth birthday. Because subsequent investigation was incomplete and for other reasons many children were excluded from the final analysis, and this was based on a test-group of 1815 vaccinated children and 2397 controls chosen at random from children of similar age and economic status in the city.

As far as could reasonably be ascertained the allocation to test and control groups was without bias. Uniform diagnostic criteria for pertussis attacks were adopted, including the use of cough plates, and an attempt was made to classify attacks into severe, moderate, light and very light, based principally on the duration of cough and presence of complications. In order to take into account variations in the period at risk, the experience of test and control groups was analysed on a basis of person-years. On this basis there were 348 pertussis attacks for 2307 person-years experience in the control group and 52 attacks for 2268 person-years experience in the test group, giving 15·1 annual pertussis attacks per 100 in the control group, compared with 2·3 in the injected group. A difference as great as this could arise by chance only once in many millions of trials. In severity of attacks, too, there was a marked difference between the two groups. Thus 3·8 per cent. of attacks in the injected group were severe, 23·1 per cent. were moderate, and 73·1 per cent. light or very light, as against 13·1 per cent. severe, 60·1 per cent. moderate and 26·8 per cent. slight in the controls. If intimate exposure under home conditions is taken as the only reliable criterion, the attack-rate per exposure in the test group was little more than a third that of the controls. After all known exposures the attack-rate was 12·8 and 68·5 per cent. for the test and control groups respectively. From their results Kendrick and Eldering also worked out what might be expected to happen in a general population by imposing the monthly incidence of pertussis (calculated on the expense of the experiment) on an imaginary population of 1000 injected children and a similar number of controls. On this basis they found that, at the end of forty-four months, 94·4 per cent. of the injected children would have escaped pertussis as against 61·0 per cent. of the controls.

Under the conditions of their study, Kendrick and Eldering seem fully justified in concluding that a substantial degree of protection was afforded to the injected group. If these results can be confirmed by others, and when opinion crystallises as to optimum dosage and other details, the arguments for immunisation in pertussis will be at least as cogent as in diphtheria. In London particularly this seems an opportune time for a large-scale investigation of this nature, since the essential preliminary—compulsory notification—has now been in force for over eight months.

LOSS OF THE THETIS

ON Thursday, June 1, the British submarine *Thetis*, during acceptance trials in Liverpool Bay, sank after the flooding of two forward compartments through one of the torpedo tubes. Her bow struck the bottom in about 130 feet of water and the shock destroyed her signalling apparatus. The release of compressed air into the water tanks lightened the ship so that 18 feet of her stern rose above water for a time, but this did not allow the rescue of the crew. Of 103 men on board 4 escaped by means of the Davis apparatus. According to press reports one of them states that 3 others were drowned in the escape hatch because they failed to put on their nose-pieces; he adds that it was difficult to get up to the hatch with the ship at an angle of 42 degrees. Those who escaped are said to have shown signs of carbon monoxide poisoning. But for full information about the accident and the attempts at rescue we must await the public inquiry that has been promised. It is to be hoped that investigation will reveal means by which any similar loss of valuable lives can be avoided in the future.

We regret to announce the death in Edinburgh on Tuesday of Dr **ARTHUR LOGAN TURNER**, laryngologist and writer, and sometime president of the Royal College of Surgeons of Edinburgh.

From Montreal is announced the death of Dr **HENRI A. LAFLEUR** at the age of 76. He was for many years professor of medicine at McGill University and more recently president of the Medical Council of Canada. Dr. Lafleur was appointed resident physician at Johns Hopkins Hospital when it was opened in May, 1889, and was there associated for 2½ years with William Osler, who was physician-in-chief.

The doubts as to whether the International Neurological Congress at Copenhagen would take place have now been resolved in a circular letter in which Dr Macdonald Critchley, secretary of the British national committee, announces that it will definitely be held this year, from Monday, Aug. 21, to Friday, Aug. 25. Further particulars will be found in our news columns.

MOYNIHAN FELLOWSHIP.—The Association of Surgeons of Great Britain and Ireland invite applications for this fellowship which may be held for one year and is worth £350. Further particulars will be found in our advertisement columns.

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6 Krueger, A. P., Nichols, V. C., and Frawley, J. M., *Proc. Soc. exp. Biol., N.Y.* 1932–33, 30, 1097.

7 Kendrick, P., and Eldering, G., *Amer. J. Hyg.* May, 1939, p. 133.

SPECIAL ARTICLES

THE PRACTITIONER AS SCIENTIST*

By Lord Stamp, G C B , D Sc , LL D

I SUPPOSE in most professional careers men each a stage when they throw aside, not ambition, but textbooks, and carry on with some new mine of knowledge that seems to escape the examiners Indeed we are constantly being told that the first job of the newly qualified is to forget all they have learned. But as a matter of fact I think this declaration is just a pose, t merely means that you come down from the general o the particular, and the particular is always a "little different" You are dealing not only with facts when you get a patient, but also with what he thinks about acts, and facts that are only just germinating

The real difficulty about your profession as I see it s that it is the one calling that is expected to be both an art and a science In others the artist can disclaim all knowledge of science or its methods, and be thought even the more highly of In science a rigid adherence to scientific principles and refusal to be led away by ndividual differences to prove things in the main, as t were, is the hallmark of the real brand It is true hat the biologist has been told to "treasure his exceptions" because in them lies the tiny gateway to full knowledge In medicine every case, I suppose, has its little exceptions

Critics of the medical profession are always saying that you are given a smattering of one or two sciences, but that the majority of you lose all grip of them, and never pursue them as sciences, and only in a shadowy way do they afterwards affect your life In fact you work empirically with a few rules, drugs, and books You delegate to specialists specific pieces of scientific work that help your diagnosis, but in yourself you do little that is scientific There is much that is instinctive in your subterranean consciousness and in your processes of deductive reasoning If you have the knack of relieving pain, of creating confidence of assisting nature, you may get high credit as a medical man with only an average power to *cure*, and no power at all to contribute to the *science* of cure You are so much a part of the emotional life of mankind, its griefs and fears, even its economic potentialities, individual by individual, that you must be an artist to succeed When you enter the house it must be primarily the *artist in you that is* uppermost

OBSERVATION AND GENERALISATION

Every individual case of illness escapes complete classification because there is a background of the personal which makes it somehow different from every other case, and this background is part of the thing that you have to cure or allow for Being individual you cannot subject it to scientific method, you have to feel it instinctively, and it is no good you being a thinking machine or an introvert, you must be a real extrovert, and have fitting human sympathy to understand such a background But when you have got past the individual aspects of your case, after all, the person you are dealing with has a trouble which is not unique, it is one example of a large number and therefore it has a high common factor with others, and therefore it is capable of generalisation, and therefore again it is capable of scientific treatment

Each doctor accumulates for each complaint a little group of treatment and experience which forms his scientific body *of knowledge It is for many things* so woolly in its outlines and so small in its number of cases that it is very hard for him to be certain that he knows the whole scientific truth about it He cannot make a controlled experiment of different types of treatment of any size This kind of larger scientific generalisation emerges in the hospitals, but it can only emerge for those complaints which hospital treatment mostly covers The average practitioner finds it very hard to contribute to the body of general knowledge except by gossip and verbal communication to a few colleagues Rigid scientific test for cause and effect is almost absent

I recently had cause to say, in my address to the British Association at Blackpool, in reference to a project that has long occupied my mind —

> "The scientific ancillaries of medicine have made immense strides Clinical medicine as an art makes *tardy, unscientific and halting* use *of them* The public remain as credulous as ever, their range of gullibility widened with every pseudoscientific approach (We do not know what proportion of positive cases can create the illusion of a significant majority in mass psychology, but I suspect that it is often as low as 20 per cent) For a considerable range of troubles inadequately represented in hospitals, the real experience passes through the hands of thousands of practitioners, each with too small a sample to be statistically significant, and is, therefore wasted from a scientific point of view Half-verified theories run riot as medical fashions to peter out gradually in disillusionment If the scattered cases were all centralised through appropriately drawn case-histories, framed by a more scientifically trained profession, individual idiosyncrasy would cancel out, and mass scrutiny would bring the theories to a critical statistical issue of verification or refutation *in a few months Cures would no longer be as epidemic* as diseases This would be to the advantage of all society and achieve an ever greater boon in suggesting new points for central research"

This seemed to me plain enough, but I found many *doctors puzzled by it*

POOLING OF PRACTITIONERS' EXPERIENCE

As a whole doctors are not very strong on the statistical aspects of their work. Certain types of illness are not much found in hospital practice on a large scale They are scattered through the community widely, but no one practitioner has many of them If he generalises at all from the few cases that come to him, they may be few enough to have all the statistical perils of small numbers, the groups having no statistical stability nor the results any real significance He may realise this and decline to come to general conclusions, lapsing into statistical impotence or agnosticism. Or someone may put out a theory of treatment on a narrow basis of fact and this, for want of a challenge, or of wide factual test, may run riot through medical practice for years before it is found wanting

In a new American book, "The Horse and Buggy Doctor," by Dr A. I Hertzler which I advise every young doctor to read, he remarks

> "When a new drug appears, a large number of doctors using it probably will believe that it acts beneficially After a period of years its usefulness is found to be limited or nil I remember very well when quassia was believed to cure cancer of the stomach Nothing in fact, requires so much careful observation over so long a period of time as accurately appraising the value of the drugs as modifiers of the course of a disease New drugs are introduced that are said to be

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* Abridged from an address delivered at the prize-giving of Charing Cross Hospital medical school on June 8

more effective than the old ones, and the doctor must personally test this claim by observation."

Now if all the experience of the individual doctors could be pooled, and critical tests made, the truth might be quickly apparent Suppose that in an aggregate of 1000 cases, 500 had been treated in a particular way, and in the other 500 that "cure" was not tried; suppose that in the first group the full recovery ensued in 400 cases, but in the second group the number recovering was 350, there would be one kind of uncertain conclusion. But if the "control" 500 showed only 50 recoveries, the answer would be most definite

Now this aggregation would require great care In the first instance, the case-history or unit form would need to be drawn with much precision, to secure quantitative and unequivocal answers to critical clinical points, and uniformity in the conception of the replies. It would have to be supplied to a wide variety of practitioners, for if it were taken only by doctors with curious scientific imaginations, they would be a biased sample, likely to carry the scientific characteristic into the treatment of their cases. Each would have to undertake to complete it for *all* his cases, and not merely those he thought "worth while"; otherwise the desire to prove a case and to ignore awkward negative instances might vitiate the result. Such forms might then, in the central bureau, be capable of treatment by perforated cards through Hollerith or Powers machines, bring out automatically classifications based initially, say, on one for sex, for age, for locality, for previous illness, for occupation, as well as the full undifferentiated aggregate, which often hides important sub-generalisations In this way, though the individual case might be clinically personal, rule-of-thumb, empirical in treatment, it could yet become part of a great scientific induction. Probably negative proofs, proofs of inefficacy of particular vaunted methods, would greatly outnumber positive and triumphant results; but I am quite sure that most important leads for specific further research would emerge.

This grouping of the *non*-significant (or even the *insignificant*) until it became significant, would be of enormous value to medical science It would expose the quack remedy relentlessly. Again, the ordinary doctor is not very scientific, for if he does not feed the centre with details, for scientific use, so also he tends not to appreciate what the centre holds for him already Here is a recent declaration.—

"Yet no physician is able to tell what causes the commonest variety of stiffened joints. The most shocking fact, however, is that the average practitioner, when consulted by a rheumatic patient, does not have even the knowledge that is *available*. Though no one knows exactly what causes rheumatoid arthritis, a good deal is known about what to do for it. . . . Public hospitals in the United States do take an occasional rheumatic patient but seldom are they organised to use all the latest scientific knowledge."[1]

The Medical Research Council have complained that although insulin has been proving its value in the hospitals for the past ten years, outside the deaths from diabetes show very little decrease. Prof V. H Mottram says that in 99 cases out of 100 the medical student sloughs his scientific training when he enters the wards—and few of the specialists in botany, zoology, physiology, &c., ever bother to relate their subject to the practice of medicine Medical research is not exploited rapidly enough by the over-occupied medical practitioner, though it is industrially exploited by commerce[2]

Nevertheless, certain groups have begun to pool statistical experience on these lines An interesting example on a lower plane than doctors' case records is found in an institution in America, financed by voluntary contributions, called "Vitality Records" (26, West [illegible] Street, New York) Anyone can help by completing their questionnaires, which cover not only the [illegible] cults to which people belong but also details [illegible] loose-fitting clothes, sleep, worry, perspiration It is claimed by Prof. Irving Fisher and his associates, Dr. Alexis Carrel (author of "Man the Unknown"), and Prof E V McCallum, of Johns Hopkins University "that by analysing thousands—perhaps a million—of such records, and by keeping in touch with these persons each year, a remarkable mass of new health knowledge, of the utmost importance to human welfare is being accumulated"[3]

THE MAN AND THE METHOD

My plea today, therefore, is that it shall be your ambition to be a unit contributor to great scientific induction. Please, I beg of you, keep up enough elementary mathematics to understand statistical methods, so that the safety of samples, the peril of small numbers, the normal curve of error, the standard deviation, and possibly the coefficient of correlation may mean something to you. For these are the common factors of scientific expression, the grammar or criteria of proof, the mental picture of the group, the total class. It is wrong that you should not understand science to *apply* it; it is a pity that you should stop at *applying* and not systematically record; for combined records are *your contribution to scientific knowledge* and the future of medicine

The temptations to diffuse artistic personal medicine are many. Records and notes are a nuisance when you are pressed with crowding human problems Better to heal ten patients with no records than eight with full scientific study, you may well say. And indeed, the human aspect is always a compelling one, and science takes a back seat Prontosil shows fine results in lowering mortality from the previous experience in the same hospital. But the claim to direct high correlation is rather obscured when it is seen that mortality has also fallen elsewhere without it Other causes are at work too. The scientific method of establishing correlation would be to keep a controlled experiment in the *one* establishment, by treating only every other case with the new drug, at random, and over a period testing the results of the two groups But there comes the human problem. Who dare withhold from a patient, because she happens to be the odd one for the control group, *any* chance that the treatment affords of recovery, and let her die without it, just to make a scientific comparison? For that patient is a human being, with a context of human sympathies and of lives surcharged with emotion

The limitations of the scientific method in actual practice are thus obvious; but with them all, opportunity *does* remain For the *scientific method* is not only inductive—it is deductive. In contradistinction to graduate study as above outlined, postgraduate study, as the medical man regards it, is what he gives himself according to his own plan after he has taken up his life's task He seeks no academic recognition and seldom troubles himself about new ideas. He converts his knowledge into understanding and his understanding into art and these find expression for his own personality and capacity. He may go far in his profession and never have an original idea in his life He need not even acquire any new knowledge. Most of us know far more facts than we can intelligently use This point is illustrated by a statement the great German clinician, Traube, was wont to make when the autopsy [illegible] that a wrong diagnosis had been made. "The facts were there but we did not think right." To think logically from the evidence at hand is the ultimate aim in the education of the vast majority of medical practitioners.

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[1] Kelly, F C, *Forum*, 1938, p 203

[2] The Frustration of Science, London, 1935, p 95

[3] Giles, R, A Step Towards Livelier Old Age, *Readers' Digest*, February, 1938

THE BUSY MIND

I can hear your impatient exclamation that you have no time for all this—to keep your patients living and get your own living is the size of your job. It is so full that good things have to be pushed out to get good things in. As I once cabled to American friends demanding rooms in Gleneagles Hotel in August "Can only get more Americans in by turning Americans out." I do not pretend to know which school of psychology is now uppermost, but Spearman says "mental competition with the law of constant output rules our actual intellectual lives. The commencement of any mental activity causes other activity to cease, and vice versa. The law of constant output is thus stated: 'Every mind tends to keep its total simultaneous output constant in quantity, however varying in quality.'" The difficulty was more attractively and provocatively stated by a medical man who has done more than most for human well-being—Conan Doyle, with his champion therapeutic, Sherlock Holmes, in his very first introduction to the public in "A Study in Scarlet." May I read a few lines? You will remember that Sherlock always had access to an extraordinary range of items of human knowledge in out of the way corners:—

"My surprise reached a climax, however, when I found incidentally that he was ignorant of the Copernican Theory and of the composition of the Solar System. That any civilised human being in this nineteenth century should not be aware that the earth travelled round the sun appeared to be to me such an extraordinary fact that I could hardly realise it. 'You appear to be astonished,' he said, smiling at my expression of surprise. 'Now that I do know it I shall do my best to forget it.'

"'To *forget* it!'

"'You see,' he explained, 'I consider that a man's brain originally is like a little empty attic, and you have to stock it with such furniture as you choose. A fool takes in all the lumber of every sort that he comes across, so that the knowledge which might be useful to him gets crowded out, or at best is jumbled up with a lot of other things, so that he has a difficulty in laying his hands upon it. Now the skilful workman is very careful indeed as to what he takes into his brain-attic. He will have nothing but the tools which may help him in doing his work, but of these he has a large assortment, and all in the most perfect order. It is a mistake to think that that little room has elastic walls and can distend to any extent. Depend upon it there comes a time when for every addition of knowledge you forget something that you knew before. It is of the highest importance, therefore, not to have useless facts elbowing out the useful ones.'

"'But the Solar System!' I protested.

"'What the deuce is it to me?' he interrupted impatiently; 'you say that we go round the sun. If we went round the moon it would not make a pennyworth of difference to me or to my work.'"

Now quite possibly the contemplation of the patient in his position in your scientific problem may detract a little from your bedside manner, and the human touch. But I doubt it. I believe you will so strengthen your artistic human perceptions by your scientific conceptions that you will have a stronger inner sense. After a time the induction becomes the instinct, the reasoned rule sublimates into the sublimer guesswork. You are not being asked to carry a new load of facts so much as to acquire and maintain an additional "awareness"—an extra attitude of mind. William James once said: "I have no doubt whatever that most people live, whether physically, intellectually or morally, in a very restricted circle of their potential being. They *make use* of a very small portion of their possible consciousness, and of their soul's resources in general, much like a man who, out of his whole bodily organism, should get into a habit of using and moving only his little finger."

* * *

Have I been talking high falutin? As Kelvin says, "We do not know much about anything until we have learned to measure it." To which you will add: and when we *have measured it, perhaps its vital spirit has* eluded us. Some of you will be cynical and will say in reply to my question, "Is medical practice science or art?" what the Oxford don did about logic—it is neither an art nor a science but a dodge. Canon Streeter said: "We shall in no way disparage science because quality is excluded from its purview, any more than we decry an ordnance map because it can give us no idea of the view from Richmond Hill." In truth the doctor must have science and art as two blades of a pair of scissors—singly they are imperfect instruments, but together the mind uses them to cut into the fabric of the living unknown.

ENDOCRINOLOGY OF THE PROSTATE

AN annotation on Jan. 21 reviewed several papers on the ætiology of benign enlargement of the prostate. A number of related studies also require consideration.

Deming and Neumann (1939), in a report based on microscopical study of prostates obtained at autopsy from subjects aged 45 or more, agree with Cuneo in rejecting the view that the suburethral glands of Albarran are involved in the early stages of benign enlargement. In their opinion the hypertrophy begins as a fibromyomatous change in the posterior wall of the urethra and in the internal sphincter of the bladder, and they point out that this muscular tissue is partly of müllerian origin, and that the change therefore corresponds to fibromyomatous growths in the uterine wall. They hold that the glandular part of the tumour originates from ducts adjacent to the fibromyomatous nodule, and that these ducts invade the nodule, which in its later stages thus simulates an encapsulated glandular tumour. Unfortunately, pathological investigations of the kind conducted by Deming and Neumann cannot either confirm or refute the view (which in a sense directed their inquiry and is derived from experiments) that prostatic adenomata develop as a result of œstrogenic stimulation of the uterus masculinus and of the fibromuscular tissue within which it lies.

This hypothesis assumes that an effective œstrogenic stimulus may become operative in men of middle age, a possibility which has been discussed by Emmens and Parkes (1938) in view of the known œstrogenic behaviour of some of the male hormone compounds. It appears that several male-hormone substances (including testosterone) exhibit a general gynæcogenic action. One of the androgenic compounds, transandrostenediol, shows unmistakable œstrogenic activity, and although it is not known to occur naturally it may do so, because it belongs to the androsterone-testosterone series. Emmens and Parkes in an attempt to discover whether it could be the elusive œstrogen of the testis tried to find out if testosterone could inhibit the œstrogenic effect of an extract of pig's testis in the same way as it inhibits the effect of œstrone; but, if the œstrogenic activity of the extract of pig's testis had been due to transandrostenediol, 1 mg. of the substance would have had to be present in 7.5 mg.

of the extract, which would have entailed a corresponding androgenic potency far greater (about nine times) than that which the extract was subsequently shown to possess. Two conclusions regarding the testicular œstrogen may therefore be drawn from this observation: (*a*) it is not transandrostenediol or any other known member of the androsterone-testosterone series; and (*b*) its effect can be inhibited by testosterone

A further possibility considered by Emmens and Parkes is that the suprarenal cortex may elaborate an œstrogenic substance in the male It is known that suprarenal disturbance may lead to an increased excretion of œstrogens and that œstrogenic substances can be extracted from the suprarenals. Their possible participation in prostatic enlargement must therefore be taken into consideration; but the study of this aspect of the suprarenals is only beginning, and the available evidence is very confusing.

It is well known that the prostate of a newborn human baby often exhibits metaplastic changes in its epithelium similar to those that develop in monkeys and rodents treated with œstrogenic substances. This fact is today regarded as indicating that œstrogenic substances from the maternal organism enter the fœtus from the maternal circulation. Hamilton et al (1937) and Moore and McLellan (1938) have reported on the effects of œstrogenic stimulation on mature men, but their results are conflicting. According to Hamilton and his co-workers œstrone has no carcinogenic action on the prostate of man, nor does it intensify dysfunction in the urinary tract. More recently, however, Moore and McLellan, who injected greater quantities of the hormone, found that œstrone had a profound and definite effect on the tissues of the prostate The most conspicuous change is in the epithelium of the urethra and prostatic collecting ducts, which shows increased stratification of the usual transitional epithelium and foci of true squamous metaplasia. This finding is of particular interest because of the similarity of the histological changes to those in the prostate of the newborn infant. The epithelial acini and stroma of the adenomatous nodules show little effect of the œstrogen, but an abundance of lymphoid tissue was noted All these effects of œstrogenic stimulation in man represent, according to Moore and McLellan, an intensification of the changes observed in the benignly hypertrophied prostate of a man not treated with an œstrogen They are also in part similar to the effects, first described by de Jongh and Kok (1935), of œstrogenic stimulation on the prostate of the dog. These comprise metaplastic stratification not only of the epithelium of the urethra and collecting ducts, but also of that of the secretory acini themselves. Petit and his co-workers (1939) have reinvestigated these changes, and they regard them as sufficiently similar to those which occur spontaneously in man to entitle their report "réalisation expérimentale de l'adénome prostatique"

CLINICAL EVIDENCE

If benign prostatic enlargement is due always or sometimes to abnormal œstrogenic stimulation—as it undoubtedly is in the case of the dog (Zuckerman and Groome 1937)—the primary aim of treatment would be the restoration of a normal balance between male hormone and œstrogenic hormone. Numerous clinical reports of such treatment have already appeared, and some have been discussed in these columns. The evidence remains conflicting, but it may be worth while to refer to some recent papers on the subject.

Cuneo (1938) and Jomain (1938), who accept the theory, primarily derived from experiments on monkeys, that prostatic adenomata originate from the epithelial and fibromuscular tissue of the uterus masculinus, report on the treatment of patients with testicular extract They prefer extracts to synthetic substances, such as testosterone, for they are not convinced that one isolated chemical substance possesses the powers of the whole testicular secretion. The initial dose given is equivalent to 1·2 g. of the gland daily, the effect includes rapid improvement of functional disorders, and rectal and urethroscopic examination suggests that the prostate becomes smaller. Cuneo does not claim that his treatment can reduce prostatic hypertrophy, but he believes that prolonged treatment can prevent further enlargement.

Laroche (1937) favours the use of the acetate and propionate of testosterone. He apparently secured lasting relief from the distressing symptoms of prostatic hypertrophy, and there were no relapses even eight months after cessation of the treatment. He gave large doses (40–60 mg. daily of the acetate and 10–20 mg. of the propionate). He too is uncertain about the precise effect of the treatment on the prostate, but his further findings (Laroche and Bompard 1938) have been confirmed by Lapeyre (1938) and Marcel (1938). All these workers agree that the results of treatment with the esters of testosterone differ according to the stage of the disease. In simple prostatitis a favourable result can almost always be expected In chronic and incomplete retention improvements are frequent and great enough to justify this therapy. Distension of the bladder presents an almost constant obstacle to hormonal action. The evolution of complete and permanent retention, however, is often modified by the treatment, which in these cases must usually be prolonged and intensive The French writers definitely advise the treatment in inoperable cases and suggest it as a useful postoperative measure to prevent further enlargement General agreement with these views has been expressed by Nestmann (1939) as well as by Bolend (1939), who, apart from reporting considerable symptomatic relief from androgenic therapy, makes observations on the effect of such therapy on the prostate itself. He too was unable to demonstrate any decrease in the size of the organ, but biopsy specimens nevertheless show that while there was an increase in the glandular activity of the prostatic acini, there was either no change or a decrease in the amount of stroma and a reduction in the inflammatory reaction Cary, in two reports on 44 patients (1938, 1939), also records considerable success in the symptomatic treatment of the disease, and he refers to three other American clinical studies, which have not been dealt with in this review, and which yielded results similar to his own.

The importance attached to the question of the effect of male hormone on the tissues of an enlarged prostate perhaps lends undue significance to the negative observation of Moore and McLellan that testosterone propionate (in doses comparable with those used by Laroche) had no significant effect on the prostatic epithelium or stroma This observation, based on only five cases in which treatment was not continued very long, does not invite belief that the generally admitted symptomatic relief, which androgenic treatment provides in prostatic enlargement, is due to any immediate change in the prostate. A possible explanation of this immediate relief is offered by Champy and his co-workers (1937), who

OTTAWA CIVIC HOSPITAL

point out that retention of urine does not always appear to be related to the size of the prostate, and that one of the most obvious results of treatment with male hormone is the rapid appearance of perivascular oedema near the verumontanum They suggest that retention is due to an irregular contraction of the vesical sphincter, causing the lobes of the prostate to be pressed into such a position as to block the passage of urine Relief can be obtained by operating on the posterior part of the contracted sphincter, and they claim that relaxation of the muscle would have the same result If such relaxation accompanies perivascular oedema in this region, an explanation is offered of the rapid action of male hormone in urinary dysfunction

Laroche, Simmonet, et al (1938) also report on the general effects of male hormone on elderly men Quantitative tests were made of the effects produced by the administration of esters of testosterone on subjects suffering merely from senility, and considerable improvement, such as an increase in weight and muscular power, was observed, though fatigue set in much earlier There was also some psychological improvement in their patients These results were apparently permanent, but since an old organism is prone to many frailties that cannot be remedied by sex hormones, Laroche points out that it is doubtful whether the improvement was for the ultimate good of the patient, and for that reason he advises caution in rejuvenating treatments Weiss (1939) reports on the beneficial effect of testosterone propionate on men and women suffering from severe and depressing results of endocrine derangements, and Joltrain (1938) remarks that the acetate of testosterone seems to have a less exciting effect on the vegetative nervous system than does the propionate He notes, too, that apart from its relief of functional troubles in prostatic hypertrophy, testosterone also seems to augment renal permeability He suggests that testosterone associated with strong doses of strychnine and, in some cases, of the anterior lobe of the pituitary, favourably influences arterial spasm

COMMENTS

If the papers reviewed here indicate the present position, it is clear that in general the problem of the treatment of prostatic hypertrophy has not yet been solved Perhaps testosterone is not the only testicular hormone but only a part of a necessary chemical complex, or perhaps the injected testosterone undergoes metabolic changes—a possibility considered in our issue of April 22 (p 948) The variable results of the hormone treatment of prostatic hypertrophy may be due to these and other factors, but the facts observed strongly support the view that prostatic hypertrophy is of endocrine origin

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(Continued at foot of next column)

MEDICINE AND THE LAW

Maintenance of a Violent Patient

THE county court judge at Barnet last month had to adjudicate upon the claim of a nursing home for a fee for a private mental patient whose violence had caused the termination of the contract for her maintenance Dr H R S Walford, the proprietor of the nursing home, claimed £24 10s 6d from Mr. Arthur Levy, the patient's son This sum represented an agreed fee of £12 12s for a week s maintenance, £2 2s for the issue of a temporary certificate in connexion with the patient's removal to another home, and the cost of repairing damage done by the patient The plaintiff gave evidence of his having agreed (after conversation with her medical attendant) to take Mrs Levy at a fee of £12 12s a week The patient was drowsy for the first two days, as though under the influence of a sedative She then became violent She threw a clock through a window, broke the bedroom furniture against the wall and tore up blankets She was removed to another room and caused similar damage there Dr Walford then telephoned to the patient s son and said she must be moved Mrs Levy was taken away after 3½ days' residence She entered another mental home as a voluntary patient and was now recovering

It was contended for the defendant that he was not liable for his mother s maintenance, that in any case he should not be charged for a full week, and that the plaintiff, knowing that mental patients may become violent, might have taken more efficient action to prevent the damage If this last contention means that the patient should have been placed under physical restraint or deprived of furniture and blankets, it is easy to imagine the complaints which the suggested action would have evoked

Although the defendant insisted that he had never admitted liability for his mother's maintenance in Dr Walford s nursing home, the judge said there was no doubt that the son was liable, although he hoped that whatever sum was recoverable would come out of the mother's property The judge held that the proper amount payable for maintenance was £6 6s —namely, half the weekly charge It was at Dr Walford's request that Mrs Levy left the home With regard to the fee for the issue of a certificate, the judge apparently disallowed the claim for £2 2s, remarking that Dr Walford had done no more than sign his name on a piece of paper He gave judgment for a total of £15 15s with costs

No disrespect is intended to the justice administered in our county courts if two observations of a general nature are added First, had this been the case of an ordinary contract for taking in a lodger at a boarding house, the landlady would presumably have been entitled to pay for a week, notwithstanding that, owing to the unexpected violence of her visitor she had to ask the visitor to leave half way through the week Secondly, the law allows, and indeed in many cases requires, members of the medical profession to sign certificates All they do, it is true, is to sign their name on a piece of paper, but it would be

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(Continued from previous column)

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rather a revolutionary decision to deny them a fee because the physical action of signing is simple and unexacting.

Hospital and Inquest Jury

At a Hampton inquest on a young man who had been fatally injured in a traffic accident, the jury added to its verdict of "accidental death" the rider that a more thorough examination should have been made before the deceased was discharged from the Richmond Royal Hospital. The patient was radiographed on admission; no fracture was discerned. He was allowed up on the tenth day, and, no untoward symptom having shown itself, was permitted to go home four days later. He subsequently complained of headaches. Post-mortem examination disclosed a small fracture at the base of the skull.

The hospital held an inquiry into the allegation contained in the rider and has now issued its reply. The reply states that there was no evidence of brain injury or fracture; the patient was carefully watched in the full routine of the hospital's work. There was no doubt that death was due to an unusual complication of pneumococcal meningitis and not to the brain injury. Death from this cause might have occurred without injury at any time; it was unlikely that any specific treatment could have prevented it. The reply adds that it was most unfortunate that neither the resident medical officer nor the honorary surgeon was called to give evidence at the inquest. The hospital may well be entitled to assert its strong impression that, if such evidence had been available, the criticisms would not have been made.

A Problem of Chiropractic

A test case has failed to furnish an answer to the question whether chiropractic is legal or illegal in the island of Trinidad. Interesting judgments in the local court of appeal allowed the chiropractor's appeal against a magisterial penalty but left the main issue undecided.

Joseph Ferreira conducted a chiropractic clinic. Ferdinand da Costa consulted him as a chiropractor; he described his symptoms (a feeling of sickness and pains in the chest and back); Ferreira stripped him to the waist, applied an instrument called a patho-neurometer, diagnosed a disarrangement of the spinal column requiring adjustment, placed the patient on a bed, manipulated his body, weighed him and prescribed a diet of milk and greens. Asked about his fee, Ferreira said it was 3 dollars the first time and 1 dollar for future occasions. The patient was told to come back on the following Friday. Ferreira was convicted under section 54 (1) of the Medical Board Ordinance of Trinidad. The section says that "Any person, not being a member of the Board, who shall practise medicine or surgery or perform any surgical operation or give any medical opinion or advice or prescribe any medical or surgical treatment within the colony, in respect of which he shall demand or receive any fee . . . shall be liable to a penalty." The first question for the court was whether da Costa's single visit justified a finding that Ferreira was practising medicine. All three judges in the court of appeal thought that there was insufficient evidence. The examination and treatment of a single patient on a single occasion did not amount to "practice"; to constitute the offence of "practising" there must be evidence of a repeated course of conduct, one instance of such conduct was not enough. There was some authority in the English law reports in favour of this view. In Apothecaries Co *v.* Jones (1893) the defendant was summoned under the Act of 1815 whereby anyone who should "act or practise as an apothecary" without a certificate was liable to a penalty for every such offence. Jones gave medical advice and medicine to three persons at different times on the same day; ought he to pay three penalties or only one? Baron Pollock said that the words "act or practise as an apothecary" were directed against an habitual or continuous course of conduct and not against an individual act. The court held that only one penalty could be exacted.

On the second question in the Trinidad case the judges disagreed. Ferreira was charged with having practised medicine and demanded a fee for it when he was not a member of the medical board. But was chiropractic treatment to be regarded as the practice of medicine? The witness da Costa admitted that he was aware that, in going for treatment to a chiropractor, he was going to "something new". Did "practising medicine" mean practising the art of healing in accordance with the principles and practice prevailing among physicians and surgeons? Or did it include practising the art of healing by any method whatever—for example, faith-healing? The Chief Justice of Trinidad, in a minority judgment, pointed out that neither the magistrate nor the court of appeal could have any judicial knowledge of such technical matters as the work of a chiropractor, nor ought they, on the evidence in Ferreira's case, to draw any inference adverse to him. The Chief Justice dwelt on the words in section 54 (1) already quoted—"practise medicine or surgery or perform any surgical operation or prescribe any medical or surgical treatment." Medicine, he thought, was not to be construed as separate from surgery; practising medicine must be construed as meaning the practice of the art of healing *in accordance with the principles* and methods used by registered practitioners. The Chief Justice seems to have inclined towards this view because he regarded section 54 as "primarily aimed at the protection of registered practitioners against monetary competition by those who practise the art of healing in the same or similar manner as registered practitioners do themselves." His two colleagues on the bench did not agree with him here. They regarded Ferreira's treatment of da Costa as something which, if repeated, would have justified the magistrate in convicting Ferreira of medical practice contrary to section 54. The two judges forming the majority held that the essence of the transaction was that Ferreira purported to diagnose, prescribe for, and treat da Costa with the object of curing the ailments complained of. Where this was proved, the authorities clearly showed that the inference might be drawn that these acts indicated medical practice and it was immaterial that the technique or methods employed were not those which orthodox medical men would use. The diagnosis, advice, and prescribing of treatment indicated the practice of medicine; it did not matter whether the treatment prescribed was medical, surgical, osteopathic or chiropractic, massage or dental. This point is one which has been before the courts in England. Under section 32 of the Medical Act of 1858 persons cannot recover in the law-courts a fee "for any medical or surgical advice or attendance or for the performance of any operation or for any medicine . . . prescribed and supplied" unless they prove that they are registered under the act. In Hall *v.* Trotter (1921) an osteopath sued for fees for "manipulative treatment of the tissues of the body." If this was the performance of an operation the osteopath could not recover a fee. Horridge J. held that it was not the performance of an operation. Shearman, J., said that the osteopath had not given any advice; she had merely used her acquired ledge of anatomy to help her to decide the part of the body to which she should apply the treatment which she had been specifically called in to give This decision was necessarily followed in Macnaghten *v* Douglas in 1927 The plaintiff, a doctor of osteopathy of America, possessing no British medical degree, sued for 30 guineas, including 3 guineas for a "consultation" The county court judge stopped the case on the ground that the claim was barred by section 32 On appeal Acton and Talbot, JJ, felt obliged to send the case back to the county court in the light of Hall *v* Trotter They seem to have had their misgivings Physicians and surgeons will probably share them How could Mr Justice Horridge say that "manipulative treatment of the tissues of the body" was not the performance of an operation? Is there no operation without a knife? Are we still in the age of the barber surgeons? How could he say further that the osteopath had not given advice? And how could Mr Justice Shearman say that the osteopath had not given "medical or surgical advice" or "attendance"?

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM PETER QUINCE

II

In pulmonary tuberculosis it is well established that psychological distress prepares the soil for the tuberculous seed witness the incidence of this disease in young adulthood, a time when the physical body is at its prime but when the emotional disturbances are at their fiercest The frequency with which pulmonary tuberculosis follows hard on the heels of a broken engagement, or develops during an engagement which ought never to have been entered, seems to be more than mere coincidence would warrant Equally commonplace is the tuberculous patient who, faced with the prospect of returning to an intolerable home life, fails to respond to all forms of treatment Quite a few patients, too, admit to having received the diagnosis of their case with a bewildering and almost impious feeling of relief Taxed further, they will explain that it was not relief that the trouble was not more malignant, or that the diagnosis marked the end of their uncertainty, but rather a feeling of "Well, at any rate *this* is going to make a difference,' tinged with expectancy Such a patient is well on the road to self knowledge and if he proceeds further and asks himself "From what circumstances am I glad to escape?' he may be able to decide which must be altered for future harmony—the circumstances or his attitude towards them

* * *

Others have the greatest difficulty in accepting the diagnosis of their trouble This seems particularly true of athletes and Tough Guys To them the prodromal symptoms of malaise and lassitude conveyed merely that they were 'out of training" and the athletes went on playing rugger and squash until they were literally blue in the face while the Tough Guys tried to snap out of it with more and more alcohol, with much the same result—until a hæmoptysis red flagged their Gadarene careers When diagnosed, the same compensatory mechanism which forced them to become athletes (and/or Tough Guys) often forces them to resist the whole significance of the situation (This can't possibly happen to ME . I am different from other people) It is sometimes several weeks before the patient will consciously acknowledge to himself that he has tuberculosis indeed, he is nervous lest he catch it from other patients who visit him And when he does grudgingly acknowledge it, it is not a serious disease for HIM: just a slight touch, to be thrown off in no time Such a patient will always be trying to prove to his own satisfaction that he is not as ill as all that, by breaking out into extravagant exertions over and above those appropriate for his condition

When the athlete comes soberly to accept the situation he will do well not, it is to be feared, because his bodily organs are better than the next man's, but because the habit of self discipline which develops with athleticism is ingrained and will stand him in good stead The Tough Guy whose façade was but armour plating around childlike softness has not got those inner resources and is apt to fare ill.

* * *

Time is notoriously a Great Healer in cases of emotional maladjustment The period of retreat in a sanatorium brings about changes in both the inner and outer lives of many patients The married man who was finding being engaged simultaneously to three different girls rather too wearing not only escapes a trying situation by developing tuberculosis but he gains leisured detachment from which to survey his life and determine what he is really seeking meanwhile with luck the situation will clear itself up without his participation in some very disagreeable scenes being necessary Such a patient, I remember, when his tuberculosis showed signs of resolving before he was ready to face his world, proceeded to throw classical "textbook" conversion hysterias: it was they that gave the show away

* * *

The most hopeless case is the one who exhibits what I call the "Dornford Yates syndrome She (and it's nearly always a she) really believes that somewhere round the corner there exists such a world as that gifted writer portrays in his delirious fantasies a world where women are worshipped from the crowns of their heads to their glittering insteps by clean limbed leisured sportsmen with a taste for witty philandering, where every lawn is centuries old and every car a Rolls It is a make believe world we create whenever we put on evening dress and smoke cigars and behave a little above ourselves but most of us accept the twopenny bus ride back to reality with something like relief

The 'D Y S" not only believes it exists but that it is her rightful kingdom from which she is exiled for having been born to the wrong parents or having married the wrong husband Cinderella's Prince Charming does not live up to premarital sample. Disabling illness of any kind provides an escape from reality in to a world which matches her fantasy On her admission to a nursing home or sanatorium she enters her kingdom—or should I say Queendom? Enthroned in bed she gains the power and the glory about which hitherto she has only been able to dream

Meticulous service she exacts from all who attend her, rewarding here with a gracious word, reproving there with queenly displeasure. Visitors, inquiries, gifts of flowers and exciting negligées all heighten the illusion. Her rapid unpopularity among the other patients is, of course, rationalised. "The other patients dislike me, my dear, simply because the doctors make rather a favourite of me," confided a Queen Me to a newcomer (who went to the trouble of ascertaining if it were true !)—"I have never been so neglected in my life," she once snapped at a goggling floor-maid, and added, skilfully avoiding understatement, "But then at home I had seven servants"—"Really, mum, would that be altogether or one after another ?" innocently asked the floor-maid ; and was reported for impertinence.

Reality has an uncomfortable way of breaking through the best fantasies, and when it does the time has come to move to another establishment, bearing horrific tales of the shortcomings of the last one which forced the patient to abdicate.

Now the striking feature about cases of this kind is not that the disease runs a sluggish and protracted course, but that all attempts at adjuvant treatment seem doomed to meet with failure. Artificial pneumothoraces prove unselective ; section of adhesions fail to close cavities ; sanocrysin therapy provokes forbidding constitutional reactions. A malign Fate seems at work. A dramatic improvement once occurred when a husband's interest was found to be straying elsewhere. . . . But it might equally well have caused a dramatic decline, so it is not to be advocated. She is after all the victim of a disorder more intractable even than her tuberculosis, which is in comparison only a stage-property She is perfectly adjusted to Being an Invalid, so why should she get well ?

* * *

Happily there are other patients whose emotional troubles are not so deep-rooted and who do not require such a spiritual bouleversement for adjustment to reality as the "D.Y S" would. How can they be helped ? Should the kind physician sit tight on the bank and hope that Time alone will work the miracle ? Or should he flounder into the dark waters with some sketchy notion of life-saving ? Some of us indifferent swimmers feel that we can only prove a further embarrassment to those already in difficulties Most of us when we dive into these depths are apt to lose our sense of direction and emerge in panic, having stirred up more mud than we thought could possibly exist

There are times when to run along the towpath uttering encouraging noises *is good* therapy, but there are also times when we *must lend a hand* And don't we hate having to do it ! Hang it all, we argue, *it is a job for a professional* However there is no fully trained psychotherapist at hand, and if there were the patient couldn't afford a series of interviews at three guineas a crack ; *there are no* elderly, saintly, unshockable clergy in the neighbourhood, and the patient doesn't hold with this Oxford Group business. *You* have got to be the father-confessor and mediator and you realise with a sinking heart that your relationship to that patient is going to change and get completely out of control and to lead you know not whither : and further that you are definitely not qualified for the job.

* * *

The whole situation is *fraught* with difficulty. Your specialist in psychological disorders sees the patient about his affairs in a certain place and at a certain time, and the patient can steel himself for these interviews which are invested with an element of ritual. The physician is Confessor, detached and superhuman. Such a relationship in matters spiritual is difficult enough between a patient and his general practitioner whom he may regularly beat at golf with his Sanatorium Physician it is well-nigh impossible They see too much of each other running into each other as they do at every turn of the day's routine. Nobody wants to meet at breakfast-time the man to whom he confessed overnight that he still masturbates. In fact it is embarrassing to both parties—unless they are both ardent Oxford Groupers who vied with each other in confession in which case presumably they just go on where they left off. . . .

Personally I would rather confess to a saint than to a fellow sinner ; just as I would rather not compete in a Hernia Show, but would prefer to take my modest little affair (if I had one) to someone who understood it and could rid me of it Finding that other people were just as bad as I would reassure me that I wasn't so worthless perhaps and might help me to lift my head again ; but a saint who understood my evil could raise me to the stars

* * *

That is the real trouble—we are not saints "Thank God," did I hear a gentleman with his feet on the window-sill murmur ? My dear Sir, are we agreed about our definition of a saint ?

A saint, I submit, is one who accepts evil as a pathological process with no moral itch to heave a brick Man's blackest cruelties (from the very thought of which we recoil sickened) quicken in him the same compassion, interest, and desire to heal that we feel when confronted with a filthy fungating carcinoma of the breast (from which the untrained layman would recoil with averted gaze).

So it looks as if "sainthood" might be merely a matter of training—self-training—and experience. And why not ? It is perfectly natural for a medical student to find the theatre overwhelmingly staggering at his first operation . . .

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 27, 1939

Notifications.—The following cases of infectious disease were notified during the week : Smallpox, scarlet fever, 1694 ; diphtheria, 732 ; enteric fever, 25 (28 "expected") ; pneumonia (primary or influenzal), 794 ; puerperal pyrexia, 198 ; cerebrospinal fever, 31 ; acute poliomyelitis, 5 ; acute polio-encephalitis, 3 ; encephalitis lethargica, 1 ; relapsing fever, 1 (Newcastle-under-Lyme), dysentery, ophthalmia neonatorum, 105. No case of cholera, plague or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on June 2 was 3001, which included scarlet fever, 667 ; diphtheria, 579 (carriers, 20), measles, whooping-cough, 991 ; puerperal fever, 15 mothers (plus babies) ; encephalitis lethargica, 304 ; poliomyelitis, At St Margaret's Hospital there were 27 babies (plus mothers) with ophthalmia neonatorum

Deaths.—In 126 great towns, including London, there was no death from smallpox or enteric fever, 2 (0) from measles, 3 (0) from scarlet fever, from whooping-cough, 18 (2) from diphtheria, from diarrhœa and enteritis under two years, 29 (4) from influenza. The figures in parentheses are those for London itself.

Bradford, West Hartlepool, Birmingham and Bristol each reported 2 deaths from whooping-cough Fatal cases of diphtheria were scattered over 16 great towns, Liverpool reporting 3 Birmingham had 6 deaths from diarrhœa, Liverpool 3

The number of stillbirths notified during the week was 283 (corresponding to a *rate* of 42 per 1000 total births), including 43 in London.

LETTERS TO THE EDITOR

INFECTIOUS PRACTITIONERS

SIR,—I should be interested to hear opinions rom some of your readers on the ethical position of medical or dental practitioner who knowingly llows his patients to catch influenza from him A ortnight ago I went to a dentist After some ten inutes he said casually, "Do you recommend ortitude to your patients? I went to bed with a emperature of 102° last night—'flu, I suppose—ut *I* don't give in to these things *I'm* not going to ave three days in bed."

I imagine that no patient could escape catching his isease, I am not susceptible to influenza and have ever caught it in the ordinary course of my practice certainly caught it from this man and had to put ff my patients, both out of duty to them and because was not physically or mentally fit to treat them week later, when *otherwise fitter*, I lost my voice, hich involved a second period of sick leave Apart rom my own suffering, this dentist deliberately aused me an appreciable loss of revenue, for which probably have a right of action against him at law

What I should like to ascertain is the consensus f medical and dental opinion about such conduct cannot imagine the Dental Board recommending he erasure of this dentist's name from the register or infamous or disgraceful conduct in a professional espect It seems to me, however, that to subject is patients to a risk that is almost a certainty of nfection by an incapacitating and sometimes dangerous illness is conduct disgraceful in a person who is icensed by the state to practise a form of scientific herapy

I am, Sir, yours faithfully,

PHYSICIAN

Wimpole Street, W 1 June 2

SEX-INCIDENCE OF CANCER OF THE STOMACH

SIR,—I regret that Dr Baron Russell should have misunderstood the statistics (quoted in my lecture on cancer of the alimentary tract published in your issue of March 11), which lead to the conclusion that the incidence of carcinoma *of the stomach is as great in* women as in men when allowance is made for the cancer-susceptible women in whom the disease attacks the breast and uterus I shall summarise the statistics once again in the hope that they will become as convincing to him as they are to me I should also like to draw his attention to the illuminating *discussion* of the question by Dr W Cramer in his paper on the Prevention of Cancer (*Lancet*, 1934, 1, 1)

1 Official statistics show that the total incidence of cancer is approximately the same in all countries, all classes and both sexes

2 According to the Registrar General's annual statistical survey for 1935 the stomach accounted for 10·6 per cent of the females and 22·5 per cent of the males dying from cancer in Great Britain The same survey shows that the stomach is involved in 24·9 per cent of the female deaths from cancer when the deaths from cancer of the breast and uterus are deducted from the total This figure closely approximates to that for the male deaths from cancer of the stomach (22·5 per cent)

3 The official Swedish figures give similar results, although the frequency of carcinoma of the stomach compared with carcinoma *in other parts of the body* is much higher in Sweden than in Great Britain, the total incidence of cancer being the same in both countries Thus cancer of the stomach accounts for 45 per cent of male deaths and 30 per cent of female deaths from cancer, but if cancer of the breast and uterus are excluded the latter figure rises to 47 per cent

4 The combined statistics from New Lodge Clinic and *Ruthin Castle* show that, although carcinoma of the stomach occurred in nearly three times as many men as women, the stomach was involved in 40 per cent of 160 men and in 38 per cent *(or almost* exactly the same proportion) of 58 women suffering from cancer of the alimentary tract and pancreas

I am, Sir, yours faithfully,

ARTHUR F HURST

New Lodge Clinic Windsor Forest June 2

THE PULMONARY EMBOLUS

SIR,—Pulmonary embolism is of such vital and universal importance that every surgeon who has studied your last issue must be grateful for the fresh approach to the subject which the articles in it show, and the information which they contain

As one who can pretend to no greater interest in the subject than must be felt by every practising surgeon, I feel some hesitation in suggesting that there is yet another standpoint from which it may be viewed Your leading article states that "the main hope of reducing the mortality lies in preventing the thrombosis" I think a closer examination of this statement is required A very limited personal investigation which I carried out some years ago, on lines which were suggested to me by familiarity with *the work of Mr Julian Taylor*, showed *the presence* of ante-mortem venous thrombi in a very large proportion of patients dying of both medical and surgical diseases The details of the investigation are out of place in this letter but in essentials it consisted of a painstaking search for ante mortem thrombi in *the veins of the calf muscles on one side only in* 20 unselected post mortems I found such thrombi in no less than 6 cases, 3 medical and 3 surgical, a total incidence of 30 per cent Taking into consideration the limited nature of the search it is a fair assumption that the actual incidence of venous thrombi in the few weeks preceding death *is several times greater* than this figure, and unless the veins of the calf suffer from a special propensity to the condition its incidence must be something approaching 100 per cent If this is so a treatment which prevents the formation of venous thrombi must be something of a *very revolutionary* nature *and I wish to suggest* that our attention may be much more usefully directed to the prevention of increase in size of the clot once it has formed

Those who have had opportunity to observe closely the postoperative course of surgical cases know that the clinical picture produced by a small pulmonary embolus is anything but dramatic, and the statistics quoted by Belt suggest that many emboli are actually symptomless Pilcher's work emphasises that emboli are only dangerous to life when they have grown to a size which makes obstruction of the pulmonary artery a possibility.

It appears to me that these observations have a most important bearing on attempts at prevention of serious and fatal pulmonary embolism by the use of anticoagulants, a subject which has an entirely new interest since heparin has been isolated and produced on a scale which makes it a practical therapeutic agent A proper trial of heparin in surgical practice can only be made if the method of administration is such that it can be used as a routine in a very large number of unselected cases Administration which begins in the preoperative period and extends over the actual time of the operation introduces difficulties and risks to which few surgeons care to expose routine cases, hence the treatment is commonly applied only to those patients who are thought on clinical grounds to be particularly liable to the complication of dangerous embolism As your leading article suggests, records of such cases are practically valueless in judging the efficacy of an agent designed to prevent *a complication which occurs so rarely and irregularly.*

I write this letter in order to suggest that full clinical trials of heparin administered as a routine during the postoperative or clot-growing period should be seriously considered—not with a view to preventing the formation of small mural thrombi, but in order that they may *not reach the size at which* they become a danger to life.

I am, Sir, yours faithfully,

A. J. GARDHAM.

Harley Street, W 1, June 5

THE FUTURE OF PSYCHOTHERAPY

SIR,—Your report of the annual meeting of the Tavistock Clinic (May 20, p 1171) causes one to reflect upon the present state of psychotherapy and to inquire whether the profession in its present form will ever be able to deal adequately with the psychoneurotic illnesses

The facts of the situation are well known In every section of the community chronic neurotic illness abounds and claims as its victims many who would respond to early intensive psychotherapy Yet despite the seriousness of the situation, no adequate attempt has been made to provide treatment for patients suffering from such conditions, and the majority of neurotic patients receive little or no specific treatment, owing partly to the small number of practitioners equipped to give such treatment and partly to the insufficient hospital accommodation available Even in London, where psychotherapy is more actively practised than anywhere else in the country, a hospital patient often has to wait six months before treatment can be commenced

Such is our problem. It is a problem the solution of which is inherently difficult, for one of the basic principles of the profession proves inadequate when the psychoneuroses have to be dealt with. This principle is that the specialist treats his poorer patients either freely or for modified rates of remuneration, while his richer patients provide the greater part of his income Hitherto this arrangement has worked moderately well for it has been possible for the practitioner to treat *a large number* of poor patients, while depending for his income on *a small number* of richer ones. Psychotherapy, however, is peculiar among the branches of medicine in that the number of patients a practitioner can see is very much smaller than in any other specialty. If psychotherapists are going to make adequate incomes from private patients it means that many poor patients will be left untreated owing to the exigencies of time At present, psychotherapists will only be forthcoming when they can be assured of a fairly safe livelihood in the specialty, but if there yet remain large numbers of untreated neurotic patients, surely it is our duty to find ways and means of providing them with the necessary treatment

The British Medical Association meets the situation by the retrograde step of recognising lay people who have taken a two-year course in psychotherapy. But such action is dangerous The clergy, upon whom the council of the B M A especially smiles, are, as a body, particularly unsuited to be psychotherapists, for a more inhibited, repressed group of people it would be difficult to find The fact that most of them fervently believe in the Pauline antithesis of the Flesh and the Spirit is enough to preclude adequate psychotherapy on their part.

The suggestion made in your issue of April 8 (p. 822), and at the annual meeting of the Tavistock Clinic, that psychological treatment should be scheduled as an approved benefit represents a valuable step in the right direction, but it would not take us nearly far enough The more one ponders the fate of our neurotic patients, the more one realises that only within some form of State medical service will they be able to obtain adequate treatment, for only under such a service will it be possible to train a sufficiently large number of psychotherapists who can give their undivided attention to their patients, untroubled by the need of making the rich pay for the poor.

Critics of socialised medicine may justly point out that little advantage has been taken by local authorities of the provisions of the Mental Treatment Act, 1930, by which they may set up outpatient clinics for psychological treatment It is also true, however, that such efforts of the local authorities are, with a few notable exceptions, almost the only ones which have been made, and that without them the neurotic patient would be even worse off than he is today Unfortunately the mere mention of a State medical service is sufficient to rouse our antagonism, and yet surely the *criterion by which we should* judge any form our profession may take is its ability to look after the welfare of our patients Today the majority of neurotic patients are being left untreated This cannot continue indefinitely, for unless the present system can be adapted to solve the problem, forces outside the profession will find a solution for us.

I am, Sir, yours faithfully,

A. M. SPENCER.

Banstead Hospital, Sutton, Surrey, May 27.

INFANTILE DIARRHŒA

SIR,—I have been much interested in Dr. Smellie's Ingleby lectures and in his analysis of 500 cases of infantile diarrhœa which appeared in your issue of April 29 It is quite true, as he points out, that we are not so much concerned with summer diarrhœa as with cases of diarrhœa and vomiting at any time of year. There is *great difficulty* sometimes in discovering the cause of this condition and I agree with him when he says that, "the relationship between infantile diarrhœa and parenteral infection has not yet been elucidated; it is suggested *that* sometimes this infection is the cause, but sometimes it is the consequence" In my work for the public health authority in the homes of North Kensington I can say that parenteral infection is more often a consequence than a cause of infantile diarrhœa, and that dietetic errors are still responsible for a considerable proportion of the cases, and *that if* these are not promptly dealt with in the home the child's resisting powers to all forms of infection is soon lowered.

I started this work fourteen years ago as a prophylactic measure and particularly to prevent these cases being sent to hospital Directly they have been notified, or even before notification, the district *nurse* visits the child and stops all food for 24 hours and orders half-normal saline to be given by the mouth; a baby three months old, if allowed to drink as much as it wants, will consume one pint of fluid in 24 hours The next day Horlick's malted milk is given —three teaspoonfuls to three ounces of water every three hours—and in this manner about 270 cal-re absorbed per diem The nurse also washes ut the bowel with normal saline once a day while e diarrhœa goes on No drugs are given to stop e diarrhœa in acute cases After five or ten days, the child is going on well, one teaspoonful of Cow nd Gate half cream is added to the malted milk, nd if no vomiting occurs in two days' time another aspoonful of dried milk is added Every two days ore dried milk is added and the malted milk iminished until a normal diet is attained, but treme caution is necessary in increasing the uantities of dried milk, and small feeds have often be given for a long period until the intestinal tract ecomes normal

In the case of breast fed infants suffering from iarrhœa and vomiting the breast milk is stopped r 24 hours and the child is given half normal saline y the mouth The bowel is not washed out in these ases The next day the breast is given as usual and the diarrhœa continues a dose of bismuth and halk is given between the feeds three times a day have never found it necessary to stop breast feeding, ven in cases where blood and mucus was passed ith the motions and the child screamed during the ight doses of bismuth four times a day have always ured this condition The only death that occurred a breast fed infant was in a child two months d who died from otitis media

During the past year the nurses attended 127 cases, which 30 were severe Only 2 died out of 17 nt to hospital There were 63 deaths in the orough from enteritis Since 1924 the nurses have tended 1478 cases in their homes and the total umber of deaths among these was 52, making a se mortality of 3 5 per cent

Infantile diarrhœa is infective only to infants of bout the same age This accounts for the good sults obtained when the child is treated at home ven when suffering from parenteral infection and it so accounts for the bad results seen in hospital ards filled with children of the same age I often ear it said that a child suffering from enteritis ould be removed from its dirty surroundings, but y results prove that this is quite a mistaken idea have never sent an enteritis child into hospital nless it was absolutely necessary as in the case of xic vomiting To send a child early into hospital very bad practice and only tends to increase the ready unnecessarily high death rate from enteritis

I am much interested in Dr Smellie's figures of 375 infants under the age of nine months only 51, or 41 per cent, had been breast-fed for a onth or more The mortality rate in this group as 25 9 per cent, which contrasts with a mortality ite of 76 6 per cent in those who had never been reast fed Thus, although there was not a great eal of difference in the incidence of gastro enteritis partially breast fed and in entirely artificially d infants, the mortality rate in the latter group as more than three times greater than in the former ' find it makes a difference in the rapidity in which child recovers from his attack of enteritis whether e has been breast fed or not for any period previous his attack

Finally, I should like to refer to the 90 infants who eveloped signs of parenteral infection after admission hospital Of these 65 died giving a death rate f 72 2 per cent After this tragic record of infection hospitals it is refreshing to hear that the new abies' block of the Birmingham Children's Hospital being equipped with small cubicles in which each fant will be isolated and the nursing and other angements have been designed to prevent all extraneous infection or cross infection among the babies in the hospital I have found that the examination of the stools bacteriologically has not been very helpful The report in some of the worst cases is invariably that no pathogenic organism is present, except in the case of dysentery, but Sonne dysentery can usually be diagnosed clinically except in the case of carriers

I feel certain that if the profession would face this problem with determination and treat these cases in their homes the death rate from enteritis from whatever cause would rapidly diminish

I am, Sir, yours faithfully,

Kensington, June 2 RONALD CARTER

SUNSHINE AND MENINGITIS

SIR,—Dr N L Corkill in your issue of May 27, from his experience of epidemics of meningococcal meningitis in the Sudan, suggests that the relevant climatic factor initiating these epidemics is the "seasonal advent of heavy ultraviolet irradiation"

In the summers of 1934 and 1935 I saw several cases in hospital and private practice, of simple serous meningitis (acute aseptic meningitis) in which there seemed to me a clear history of excessive exposure to sunlight I was so impressed by this that I wrote to two experts in tropical diseases to ask them if a meningeal reaction was characteristic of sunstroke They both replied that it was not, either clinically or at post mortem My enthusiasm for my theory was weakened but it was not completely dashed, and I discovered in the literature of this benign form of meningitis that there was a large epidemic in France in the summer of 1910—the hottest of pre war summers In the last three years I have not seen any cases and from what my friends tell me there have been few The last three summers have been sadly lacking in heavy ultraviolet irradiation so that my theory has been forgotten, even by myself

I hope some young man who has a turn for statistical inquiry, and is looking for a subject for research may one day prove to ardent sun bathers that it is possible to have too much, even of a good thing. I am, Sir, yours faithfully,

Derby, June 5 DOUGLAS HUBBLE

DAYLIGHTING STANDARDS IN WORKSHOPS

SIR,—I was much interested to see Mr G B J Athoe's letter in THE LANCET of May 20 When the Shops Act was under consideration I was concerned with the question of natural daylight for shops The complete absence of any standard was a difficulty, but one could have worked to an empirical and ordinarily reasonable standard, at any rate to start with There is apparently little incontrovertible evidence that *natural daylight* is essential to man, although that would appear to be mere common sense, and much good has been done in other directions without waiting for complete scientific proof of the necessities However, the main difficulty was that in the Shops Act the mere establishment of a standard would have been sufficient legally to put one completely out of court in trying to secure improvement in this direction This is a truly Gilbertian position which should be altered as soon as possible The new Factory Act envisages the possibility of setting standards for the lighting of factories and workshops, and similar steps should be taken for shops in which large numbers of people are employed.

I am, Sir, yours faithfully

V F. SOOTHILL,

May 31 M O H and S M O Norwich

STORED BLOOD

SIR,—Various methods have been advocated for the storage of human blood, for use in transfusion. We have, in this department, made comparative tests of some of these methods in collaboration with Drs. S. N. Farmer and M. E. Yull So far our experiments are few in number, and the results no more than suggestive; but, in view of the interest at present attached to the matter, we feel that even in this form they may be of value to your readers.

The principal questions to which answers have been sought are (*a*) how is the normal oxygen-capacity of the blood best preserved; (*b*) what are the most favourable conditions for preventing hæmolysis; and (*c*) can the bactericidal power of stored blood be artificially maintained, or even augmented? In addition certain other miscellaneous observations have been made on changes in blood during storage

In so far as the first two questions are concerned the chief conditions varied have been (1) state of oxygenation and (2) nature and amount of anticoagulant solution employed. The experiments have been carried out on blood obtained from eight normal volunteers and the maximum duration of storage has been 27 days; the temperature of storage has been about 2° C. throughout. Each sample of about 400 c cm. of blood was drawn into the appropriate anticoagulant fluid and an aliquot portion was transferred to a 1/3 pint milk bottle fitted with an arrangement which permitted storage under 15 lb. pressure of nitrogen and periodic sampling without opening the bottle; the remainder of the blood was fully oxygenated and stored similarly under 15 lb. pressure of oxygen. With one exception, the sub-samples of blood remained sterile throughout all the experiments.

The main conclusions from the chemical study are as follows. (1) In order to prevent delayed formation of small clots the final concentration of citrate in the stored blood should be 0 35 per cent. (2) The state of oxygenation makes little or no difference to the keeping qualities of blood; oxygen-capacity has been well maintained in all samples. (3) Dilution is highly advantageous in delaying hæmolysis (4) We can observe no improvement on addition of magnesium sulphate and potassium chloride to the anticoagulant solution as in "I.H T."; there is a suggestion that addition of glucose to 0·1 per cent final concentration may delay hæmolysis somewhat, but we do not regard this point as securely established.

No significant effect of any of the variations in conditions has been observed on the viscosity or plasma pH of the stored blood, nor has the fragility of the erythrocytes towards mechanical shaking been affected by the mode of storage The citrate content has shown no diminution. The possibility of the liberation of vasodilator substances from the blood during storage has been considered; we have not been able to detect any diffusible substances of this character in blood stored for more than four weeks

As regards the third question, bactericidal power has been tested by mixing graded inocula of a virulent group A *Streptococcus pyogenes* with 1 c.cm samples of blood, the mixtures being held at 37° C, and tested at two hours, one, two, four, and six days. Under these conditions, no 1 c.cm. specimen of citrated blood was capable of killing streptococci in numbers as small as 5. But blood to which 0 05 to 0 06 per cent sulphanilamide was added killed up to 500 cocci; bacteriostasis of inocula up to 5000 was maintained for three days after which free multiplication took place Sulphanilamide conferred this degree of killing-power on bloods stored for periods [illegible] twenty-six days.

Sulphanilamide may be added to the [illegible] before storage. In concentrations of 0 05 per [illegible] it had no deleterious effect on the blood, [illegible] there was no diminution in sulphanilamide [illegible] as estimated by the usual methods, over a period [illegible] fifteen days. Cocci added to stored sulphanilamide blood neither died nor mutiplied in fifteen days [illegible] 2° C, but 1000 per c cm. were killed if the [illegible] blood was incubated for two days at 37° C

The nature of the diluent and the degree [illegible] oxygenation had no appreciable effect on bactericidal power. It follows that sulphanilamide in concentrations of 60 mg per 100 c.cm has no effect on [illegible] *pyogenes* in the cold, but at temperatures at [illegible] the cocci can multiply, it has a pronounced bactericidal effect The concentration is not high enough to be toxic for the recipient of the blood. It is of interest that sugar disappeared much more [illegible] from blood which had been stored with sulphanilamide than from normal blood.

As the result of these experiments, it appears that the best treatment for blood which is to be stored is dilution with half its volume of saline containing 1·05 per cent. citrate, 0·3 per cent. glucose and [illegible] per cent sulphanilamide. The temperature of storage should be 2°–4° C Under these conditions [illegible] believe that blood can be kept in a [illegible] condition for periods up to fourteen days.

In a private discussion of this work two criticisms have been made: (1) prolonged contact with [illegible] rubber bungs may have a deleterious effect on blood; (2) blood proteins may be modified by contact with sulphanilamide so as to become a sensitising antigen. The blood in our experiments was stored in [illegible] stoppered vessels, and, as far as we could see, [illegible] not suffer from this procedure. With regard to the second point, we see no reason to suppose that [illegible] substance of the chemical constitution of sulphanilamide is likely to link with proteins in such a way as to modify their antigenic properties; more[illegible] the rarity with which symptoms possibly referable to specific hypersensitive states arise in sulphanilamide therapy is a confirmation of this view.

We are indebted to Mr. W. H. G. Jessop [illegible] bleeding the volunteers.

We are, Sir, yours faithfully,

C. R. HARINGT[illegible]

A. A. MILES

Department of Pathology, University College
Hospital Medical School, W C 1, June 6

PLACENTAL INFARCTS AND TOXÆMIA

SIR,—A sentence near the end of a leading ar[illegible] last week (p 1272) is, I think, misleading It [illegible] "On general grounds it cannot be denied [illegible] toxæmia is quite likely to be the result of ab[illegible] placental activity." Would you allow me to ex[illegible] my opposition? Here are a few of my reasons

1. Infantile convulsions (due to faulty feeding [illegible] are examples of fulminant eclampsia occurring in [illegible] non-pregnant.

2. The toxæmia of pregnancy is simply [illegible] Bright's disease in the pregnant; it differs from [illegible] disease in the non-pregnant only in the time of [illegible] development. The blood changes are so [illegible] that the non-pregnant condition has been [illegible] to as "pseudo-eclampsia." The differences in [illegible] liver are not so marked as is supposed · the [illegible] rhagic state in eclampsia is no more related [illegible] logically with eclampsia than is a bruised [illegible] causal factor in fracture of the skull As a matter [illegible] fact, the changes in the liver, in the earlier [illegible]

ether the individual be pregnant or not, are known

3 Acute yellow atrophy occurs in the non pregnant ere is no placenta in the non pregnant That is rious, but at times it seems necessary to state— l, in this question, restate—the obvious

4 The toxæmia of pregnancy occurs in women whom the placenta is not infarcted

5 "Death of the fœtus may be associated with vival of the placenta, and yet there may be no xæmia" (an earlier sentence in your leading icle)

6 Retention of a dead, a stinking, placenta is not cause of the toxæmia of pregnancy

7 Malignant disease of the placenta—chorion-ithelioma—even with metastases present, is not sociated with and does not cause the toxæmia of egnancy

It would thus seem that a placenta, infarcted or t, living or not, sterile or not, non malignant or t, can be confidently excluded as a cause of the xæmia of pregnancy

I am, Sir, yours faithfully,

R H PAPAMORE

Rugby, June 3

WOMEN ON THE G M C

SIR,—As a constant observer of the General Medical uncil, I think it would be improved if it included men members Apart from the instances which me Janet Campbell gives, a considerable number the complaints against doctors into which the uncil inquires concern sexual irregularity, and in ch inquiries a woman practitioner might make a ecial and valuable contribution to the council's cision The best type of woman representative uld probably be a married woman of early middle e who had considerable experience in general or nsulting practice Such a practitioner would be ore likely to be a candidate for direct representation an for nomination by a licensing body The Medical omen's Federation are probably right in their timate of the obstacles to the choice of a woman a member of the council While wishing them ccess in their task of persuading the profession elect at least one woman member this year as a rect representative, I think that any statutory nendment of the constitution of the council should ovide that a certain proportion of its members ould be women I confess I do not quite see what rm this provision could take It would be imprac cable to force any licensing body to appoint a oman representative, and it would not be fair to act that some of the (at present) few direct presentatives should be women The best arrange ent might be, as Sir Henry Brackenbury has ggested, to group the licensing bodies for purposes representation and to increase the direct repre ntation to about half the strength of the council would then not be unfair to direct that some of is larger body of direct representatives should be omen

I am, Sir, yours faithfully,

D HARCOURT KITCHIN,
Barrister at Law

June 3

VOMITING DURING CHEMOTHERAPY

SIR,—The following case illustrates the need for ution in the use of remedies that are still to some xtent on trial

An Indian male aged about 33 and otherwise ealthy, was admitted with acute septic gingivitis nd dental abscess In the hope that the acute ondition might subside a little before any extractions ere undertaken, and because bacteriological exam-ation of the mouth showed streptococci and other occi he was given a short course of M & B 693 he dose was six tablets on the first day, four on the second day and two on the third day It was intended to continue with small doses for another day or two, but after the third day's dose he complained of a burning sensation in the throat and chest and was seized with such uncontrollable vomiting that for three days and nights he was unable to retain anything taken by the mouth—not even a teaspoonful of iced water Although he eventually recovered, his condition for a time was extremely serious

No cause for the vomiting could be found, the Wassermann test was negative and the urine contained no albumin nor sugar No drug was given other than M & B 693 We could only ascribe the condition to an extremely acute form of the not-uncommon toxic gastric effect of this drug, usually manifest only in nausea

Although the condition of the patient's mouth showed some improvement, this was a case in which the disadvantages of the remedy far outweighed its advantages, and such an unpleasant experience is quite enough to make one pretty wary of using it in future It is not easy to explain to relatives that one has unfortunately poisoned a patient, and we were very nearly placed in this awkward situation

We are, Sir, yours faithfully,

L A P ANDERSON,
U C DATTA,
Assam Medical Service

Shillong, Assam, May 23

BRONCHOGRAPHY

SIR,—We were interested in Dr Philip Ellman's article on the introduction of an iodised oil into the tracheobronchial tree, which appeared in your issue of Feb 25 We have successfully employed the pernasal method he describes in about 250 cases since 1935 A short report of our technique, which, like Ellman's, is a modification of Forestier's, was published in the *Indian Medical Gazette* in 1936 (71, 450)

We agree with Ellman in considering the pernasal method to be the simplest of all, as it requires no special instrument or apparatus It is foolproof and devoid of any danger

We are, Sir, yours faithfully,

R VISWANATHAN,
P KESAVASWAMY

Vizagapatam, May 24

ASPIRIN AS A POISON

SIR,—Your annotation last week caused me to turn up an article in the March, 1938, number of a monthly paper called *Good Lines The Commercial Travellers Magazine* which I came across in the writing room of a provincial hotel A paragraph headed "The Jitters Drug" runs as follows —

> "In some countries restrictions are imposed on the sale of Aspirin, but in our own country its sale enjoys a freedom from restraint which has alarming possibilities Aspirin tablets may be bought in sweet shops and public houses, from door to door hawkers and from slot machines It is estimated that three thousand million (3,000,000,000) aspirin tablets, under one name and another, are sold each year in Great Britain, indeed the use of aspirin is more common in this country than chewing gum is in the United States where, with a population three as large as our own, four and a half thousand million pieces of gum were chewed last year The use of aspirin by the people of Great Britain has thus reached alarming dimensions, it is considered by some thoughtful observers that the nation is over aspirinated and indeed there are some who attribute that new malady, appropriately termed the 'Jitters' to the wholesale absorption of a drug whose sale in this country is so flamboyantly encouraged The time may come when our own legislature will follow the example of the law makers in some other countries and place restrictions on the traffic in a grossly abused drug Its sale should at least be confined to

qualified chemists and some note of warning given as to the morbid effects which its misuse may entail."

Inquiries I have made tend to confirm this appalling estimate of the quantity of aspirin consumed. As you well say, there is room for discretion in the use of this drug; at present there appears to be none.

I am, Sir, yours faithfully,

London, June 5 "AVICENNA."

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

THE NATURE OF VIRUSES

A DISCUSSION on virus diseases at the Canberra meeting of the Australian and New Zealand Association for the Advancement of Science resolved itself largely into a controversy as to whether viruses should be considered as independent living organisms. Dr. F. M Burnet (Melbourne) maintained that they should, and that the present definition of viruses as particulate agents of disease smaller than bacteria and capable of being grown only on the living cells of a host made it difficult to believe that there were any natural biological divisions between the micro-organisms of disease He pointed out that certain strictly parasitic bacteria could not be grown apart from living cells, while among the larger "true" viruses there were many features of resemblance to bacteria.

The nature of viruses, he said, could be examined from three points of view—physiochemical, pragmatic (by seeking the working hypothesis best suited to the practical needs of the virus, the research worker, the clinician, and the veterinary or plant biologist) and evolutionary. Complete physiochemical formulation of even the simplest virus was not likely to be attained for some time From the evolutionary standpoint it was possible that the virus was a pathologically active fragment of the cell it parasitised, that it represented a surviving form of a precellular stage of evolution, or that it was a specialised or degenerate descendant of a larger parasitic [illegible] organism Dr. Burnet favoured the last hypothesis [illegible] it not only provided an explanation of the [illegible] series from bacteria to the smallest viruses [illegible] fitted in with the fact that the more highly [illegible] bacteria were harder to grow in vitro, produced [illegible] specific types of disease, and showed a greater [illegible] to intracellular growth With the development [illegible] complete parasitism viruses had lost to a greater [illegible] less extent their complement of enzyme, and [illegible] made use of the enzymes and activated [illegible] the host cell. The types of virus now in [illegible] represented various stages in this process of [illegible] degeneration

Mr. R. J. Best (Adelaide) contended that [illegible] represented a surviving form of primordial [illegible] matter. Many plant viruses and at least one [illegible] virus had been isolated as proteins, and virus [illegible] had now been obtained which were actually [illegible] than some protein molecules. The virus [illegible] when isolated did not show properties [illegible] different from any other protein body, and [illegible] phenomena to suggest that it was living, but [illegible] placed in a suitable environment it constituted [illegible] independent living system which metabolised [illegible] developed at the expense of the normal [illegible] of its host. He pointed out that we now [illegible] viruses only by their biological activity in their [illegible] organism, so that if virus proteins exist in non [illegible] environments we have no method of [illegible] their existence.

A NEW SCIENTIFIC JOURNAL

The Australian National Research Council, [illegible] effect a committee of the Australian and New [illegible] Association for the Advancement of Science, [illegible] begun publication of the *Australian Journal of* [illegible] The journal is on the lines of *Nature* and will [illegible] bimonthly It will include short advance [illegible] maries of research; periodical accounts of [illegible] work in various branches of science; book [illegible] proceedings of scientific societies; doings in [illegible] universities, museums, &c., current news; [illegible] personal information and correspondence

PANEL AND CONTRACT PRACTICE

Scotland

THE annual report of the Department of Health for Scotland just published shows that the number of separate cases of incapacity during the year ended June, 1938, was 417,000, the number of days of incapacity was 25,875,000, and 31,000 insured persons were incapable of work throughout the entire year. The total number of insured persons (excluding 100,000 juveniles) was 2,244,000. Compared with 1936–37, when there was an abnormally large volume of incapacitating sickness, 1937–38 produced about 60,000 fewer cases and 750,000 fewer days of incapacity, in spite of an increase of some 3 per cent in the insured population Unlike the previous year, the period under review was free from any epidemic of influenza A relative improvement is also to be seen in the number of "all-year" or "chronic" cases of incapacity, these showing an increase of about 1 per cent, the smallest annual increase yet recorded.

The special inquiry into the problem of chronic incapacity was continued throughout the year, and all cases in which incapacity had continued for thirteen weeks and was still continuing were reported to the department by approved societies, the total being 23,736. In most of these a clinical report [illegible] obtained from the insurance practitioner con[illegible] and in nearly 5000 of them a special exam[illegible] of the patient was made by one of the [illegible] ment's medical officers or by a consultant. [illegible] reports from practitioners provided valuable [illegible] on such subjects as the use made of [illegible] consultant services, the extent to which such [illegible] fall short of the needs of particular areas, and [illegible] volume of cases in which incapacity is due to [illegible] than one cause.

The number of cases referred to the R.M.O.'s [illegible] as to incapacity, 41,118 by societies and [illegible] doctors, as to state of health, 1228 by societies, [illegible] 185 by doctors; a total of 43,279 Of the [illegible] examined the doctors' certification was [illegible] 19,967 cases (46 1 per cent), and in 6610 (15 [illegible] cent) was reversed Of the cases not [illegible] 3144 were presumed incapable of work, in [illegible] (22 7 per cent.) a final certificate was issued, [illegible] failed to attend for examination and 307 were [illegible] examined for other reasons The percentage [illegible] cases in which the doctors' certification was [illegible] was the same as in 1937, but the cases [illegible] were less by 0 6 per cent. The total cases [illegible] by approved societies again showed a decrease, [illegible]

8 less than in 1937 and 6470 less than in 1936 ere were also fewer references by doctors who desired econd opinion Two factors have had an effect references first, the total volume of incapacity l the frequency of the cases have both shrunk stantially as compared with the previous year, and ondly, the investigation being carried out into nature and *causes of long term incapacity probably* kes the reference of many cases of this type ecessary

THE MEDICAL SERVICE

n 1938 there were 2010 insurance practitioners in otland, compared with 2025 in 1937 and 2040 in 6 The small decrease is almost entirely accounted by the withdrawal of a number of practitioners m the Glasgow medical list on their becoming full e poor law medical officers under the Glasgow poration

Only 10 complaints against doctors were formally lt with during the year, and in 11 cases sums alling £144 were withheld The cases were irregular issue of certificates of incapacity, 3 of re to furnish reports to the R M O , 1 of irregular e of prescriptions, and 1 of issue of a ' repeat " cription Of the remaining 8 complaints, 4 of gence on the part of the doctor in *failing* to t the patient or diagnose the complaint, and 1 of the irregular issue of certificates of incapacity were held not to have been proved, and another certificate case was dealt with by a warning to the doctor A complaint that a doctor had rendered an account for a proprietary medicine supplied was not proceeded with on the doctor's agreeing to withdraw the account The last case was one of inadequate waiting room accommodation

The cost of medical benefit and its administration is limited under the act to 13*s* , and for 1938 the rate charged was 12*s* 5*d* , the increase of a penny over the rate in previous years being necessitated by increases in the expenditure on medicines and in departmental expenses The balance of 7*d* remains in the benefit funds of approved societies and increases their valuation surpluses

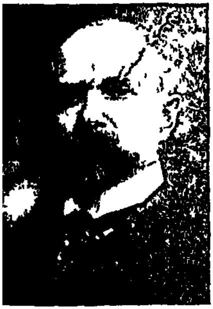
In spite of the increase in the number of persons entitled to medical benefit, the cost of drugs and appliances prescribed was only slightly more than in the preceding year, the figures being £185,400 for 1938 and £181,647 for 1937, and the average cost per person receiving drugs through chemists 24 16*d* and 24 58*d* respectively This was accounted for by the relative freedom of 1938 from epidemic illness During 1938 twelve doctors were surcharged for extravagant *prescribing* as compared with twenty in 1937

OBITUARY

FREDERICK SWINFORD EDWARDS

F R C S

r Swinford Edwards, who died at his home in don on May 29, had outlived his contemporaries v years ago he was already well known as a geon and a pioneer in the surgical treatment of lower bowel Son *of* L F Edwards of the ars, Mitcham Common, he was born in January, 3, and educated at Dulwich College, afterwards lying at Leipzig and Stuttgart In 1871 he entered the medical school of St Bartholomew's Hospital where he gained many distinctions, including the Foster prize After qualifying in 1875 he became *demonstrator* in the dissecting rooms, a post apt to lead to a surgical appointment, but having in 1880 been appointed assistant surgeon to *the* West London Hospital, *and* having in the following year joined the staff of Peter's Hospital and in 1881 that *of* St Mark's spital, he dropped out *of the running* at Bart's, many years he practised as a general surgeon l it was after successful collaboration with Sir ed Cooper in a well known book on diseases *the large intestine* that he began to pay special ention to the rectum, anus and sigmoid colon later edition of this book in 1908 bore the name Swinford Edwards *alone* and embodied his almost ique experience in this department of surgery He was the first in this country to treat hæmorrhoids by *injection instead of cutting them away*, thus saving the patient a great deal of pain, expense and time It was characteristic of him that his manipulations were all gentle In the process of time, when he did less surgery, his time was still filled up as a member of the board of management of each of the hospitals *on* which he had served He was a diligent attender of the West London Medico Chirurgical Society and became its president He also became an hon *fellow* of the American Proctologic Society and corresponding member of a number of continental medical societies In private life he was an enthusiastic freemason, founder and past member of the Rahere and Cavendish lodges, through this medium he was able to do much for disabled soldiers in the late war He had not much time left for recreation but played a sound game of golf He was regular in attendance at St Mary's, Berkeley Square, where his funeral service was held He married *Evelyn Dudley Driver who survives* him with two daughters, of whom the younger is on the board of management of the West London Hospital



JEAN RENE PERDRAU

M D LOND

Dr J R Perdrau was born at Port Louis Mauritius, on Aug 18, 1883 He died after a brief illness in Guy's Hospital on May 29, 1939 He was educated at the Royal College School and College, Mauritius where he took three scholarships He won an entrance scholarship at Guy's Hospital medical school in 1903 and graduated in medicine in 1909 Thereafter almost the whole of his life was devoted to the study of the pathology of nervous disorders

After some time at the Devon Mental Hospital (1909–11) and the Dorset Mental Hospital (1911–16) he returned to London and early in 1916 became assistant medical officer and pathologist to the Lambeth Hospital where in addition to the routine pathological duties of a large hospital he time, as opportunity offered, to continue his studies of lesions of the central nervous system. There also he began his study of herpetic encephalitis—a subject which was destined to interest him for many years. At that time it was quite unusual for a poor-law hospital to have a complete pathological department; at Lambeth Perdrau developed this, and added an active section for experimental research. Under the modern London County Council system his pathway would have been smoother, but perhaps his work would have been less fruitful and developed differently. Early in 1926 Perdrau joined the staff of the Medical Research Council, and became free to devote the whole of his time to research. At the institute at Hampstead he continued the good work he had begun at Lambeth, and though the experimental approach to the study of nervous diseases was always kept to the front he did not neglect careful and very thorough microscopic examination of all research material. He patiently accumulated through the years a very fine collection of microscope slides illustrative of a large number of lesions of the nervous system.

Of the 41 publications which stand to his name, either alone or jointly with others, perhaps the most important are those dealing with encephalitis—notably herpetic encephalitis and encephalitis lethargica. It is largely owing to the work of Perdrau and da Fano that we have experimental evidence that encephalitis lethargica is due to a modified herpes virus acting in the brain of a person who possesses partial immunity to that virus. This view is not yet accepted by everybody, but the evidence in its favour cannot be ignored, and it is now becoming clearer that a few viruses, at any rate, may persist in immunised animals for months. Perdrau has abundantly demonstrated that this may happen with herpes virus.

Perdrau was a valued member of the committee on vaccination appointed by the Ministry of Health and the Medical Research Council in 1926, and in 1928 he published a paper on postvaccinal encephalitis describing the characteristic perivascular areas of demyelination encountered in this disease. He compared his findings with those previously recorded by others in nervous disorders complicating smallpox, measles, and those developing in the course of antirabic inoculation (Pasteur treatment). With L. P. Pugh he studied the pathology of disseminated encephalomyelitis of the dog and with S. Zuckerman a case of Schilder's encephalitis periaxialis diffusa in a rhesus monkey—two further examples of diseases showing demyelination. In collaboration with C. Todd, Perdrau did some interesting work on the photodynamic action of methylene-blue on viruses and bacteriophages. They showed that certain viruses inactivated in this way formed surprisingly efficient vaccines and they utilised this methylene-blue technique in a study of the relationship between a number of viruses and their host's cells. With I. A. Galloway he studied the intranasal infection of monkeys with louping-ill virus, and independently he pointed out the close similarity of the lesions produced by louping-ill virus to those described by Cleland and Campbell for Australian X-disease virus in 1917.

In addition to his published work, Perdrau did a great deal which never saw the light of day; for example, he strove hard to manufacture an efficient vaccine for the virus of acute anterior poliomyelitis, but as he did not succeed his labours are unrecorded. He also put through many experiments in the search for infective agents in cerebrospinal fluids or brains from human cases of nervous diseases suspected to be caused by viruses. He of neurohistological technique and his direction and his wide knowledge w disposal of his colleagues, both inside National Institute for Medical Resea

"As a histologist," writes Dr. J. G. "he possessed not only perfect faculty of vivid and exact description, which his writings a pleasure to read. Nor his descriptive but often contained import for example, in describing the encephalitis, he postulated that those myelitis following measles would prove to same character, although at that time he the illustrations of one 40-y guide him. His originality as a technician by his well-known silver stain for co which has had so many imitators is apt to be forgotten, and still more his brilliant demonstration of the passage salts in solution along nerve-fibres. We his enthusiasm and wide knowledge and his criticism and guidance in difficulties."

Dr. Perdrau did not enjoy good health, and his strength by hard work. He was of a disposition and only those who knew him appreciated his kindliness and sterling He leaves a widow and three children.

FREDERICK WILLIAM ELLIS

M.D. ABERD., F.R.C.S.

Dr. F. W. Ellis, chief medical officer to the assistance committee, died in Birmingham on at the age of 63. Born at Penpol, Hayle, and educated at Newton College, he studied at Aberdeen, gaining distinction in surgery his M.D. thesis. He played in the university rugby team and later for the south of Scotland. After qualifying in 1898 he held resident posts, first in Aberdeen and then at Leeds and in London, afterwards studying at King's College for the F.R.C.S., which he took in 1905. In the previous year he had been appointed assistant medical officer to the St. Pancras Infirmary, Highgate, and after a term at Southwark Infirmary he went to Selly Oak in charge of infirmary and institution there. It was a rapid change in poor-law outlook in and in 1913 Ellis was appointed chief to the Birmingham union with charge of Road Hospital and Birmingham Infirmary. the late war when the former became the 21st General Hospital he was in command with of lieut.-colonel. After the war he returned task of reorganisation and classification and when the municipality took over the pitals, those of Birmingham were already of their kind Ellis was able then to develop his schemes for the better nursing of the chronic sick, and his evidence was laid before the interdepartmental committee He took great interest in the Medical Superintendents' Society and was at one time its president A colleague writes "All who came in contact with Ellis were struck with his ability and charm His artistic temperament and wide outlook made him a good companion He was always a favourite with children His heavy responsibilities left him little time to pursue his hobby of painting in water colours but he exhibited more than once at the Birmingham Royal Water Colour Society"

Dr Ellis leaves a widow with a family of three sons and a daughter

ALBERT BOYCE BARROW

M B LOND, F R C S ENG

THE name of Boyce Barrow, who died in the Prince of Wales Hospital, Tottenham, on May 29 as the result of a motoring accident, may now be unfamiliar except to those who must be considered seniors, for it is 27 years since he retired, and he wrote but little But 40 years ago, when he was surgeon at King's and senior surgeon at the Royal Free, he was one of the most distinguished exponents of the old school of surgery and had an extensive and fashionable private practice Barrow was born in 1847 in Newmarket, so his love of horses, which were his lifetime hobby and the main interest of his retirement, was acquired early and almost inevitably He was educated at King's College, London, where he qualified in 1873 He took his F R C S in 1875 and succeeded William Rose as surgical registrar at King's During the nine years before he was made assistant surgeon at King's he was appointed to the staffs of the Westminster and Royal Free Hospitals He became full surgeon at King's in 1893 and retired in 1912 During the late war he returned to work both in the wards and the out-patient department

As an operating surgeon Barrow was deliberate and painstaking rather than brilliant, but his technique was so good that onlookers were often surprised at the short time he took over an operation His teaching did not attract the younger men, for here again he seemed slow and undramatic in his expositions, but senior students preparing for the final fellowship and the like came to appreciate his rounds He was a fine upstanding figure, always immaculate in dress, and much liked by his house surgeons and dressers He was sincere in all he did, but he was full of consideration for others and never spoke unkindly of anyone

In his young days at Newmarket he laid the foundations of a profound knowledge of veterinary surgery He first began to breed racehorses at a small farm at Blackmore in Essex, but he later moved to a larger property at Writtle, where at times he had as many as sixty horses in his stud He was an exceptional judge of thoroughbreds, and an accomplished horseman In his younger days he hunted regularly, and up to the day of his accident he rarely missed a meeting where one of his horses was running Mr Barrow was unmarried

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

BY MEDICUS, M P

THE programme of parliamentary business that vas fixed before the week's recess at Whitsun began vith a supply vote for the Ministry of Labour and ncluded a debate on the Unemployment Insurance Bill, colonial affairs, two days on the Ministry of upply and Friday on the Board of Trade The ivil Defence Bill has still got more stages to pass hrough and the provision of air raid shelters will robably be discussed in detail

* * *

The report of the Unemployment Assistance Board or 1938, which was published last month, contains ome interesting reading and some interesting missions There is very little about health questions n chap 7 there is a division labelled "health" and occupies less than 1 page in a volume of 198 would be well in future to give more space to he effects of illness and accident on employment and nemployment, and to give as detailed consideration health as to the reports of the regional officers

Unless the figures of unemployment the operations the Unemployment Assistance Board and the orations of public assistance are considered together is impossible to get a complete picture of the rk side of the life of Great Britain The report ows that about 9 per cent of the male and 15 per nt of the female applicants in receipt of allowances the beginning of October, 1938 began their current ell of unemployment assistance after a period of kness For males over thirty five the proportion es to 10 per cent and for females between twenty e and forty four to 20 per cent It appears that 72 per cent of the sickness was treated by a pa doctor, 6 per cent by a private doctor, 9 per ce by a public assistance doctor, 6 per cent at o patient departments or clinics and 0 per cent hospital wards The average treatment lasted ab eight weeks, but whereas 28 per cent of the c were treated for only a week or less, 17 per ce were treated for over three months At all ages the proportion of women under treatment was substantially higher than the proportion of men

In other parts of the report—in chap 2 for instance on "the maintenance and improvement of employability of applicants to the board"—there is important information on the medical aspect of the topics considered, but it would lead to greater clarity and a better perception of the problem as a whole if all such matters were considered together Dealing with the instructional centres, which are open to men between eighteen and forty five from any part of the country, it is revealed that the number of trainees remains fairly constant at 105,000 Those rejected as unsuitable for instruction on medical grounds reached 22 per cent, but the Unemployment Assistance Board have no power to provide any treatment required Many of the defects are remediable by dental, optical or medical treatment, but there remain a proportion of men with defects which are not remediable It would surely be reasonable to equip the board with power to provide treatment for its trainees or to secure it through local authorities who are now able to refuse to cooperate with the board in this way

Training centres may be extended beyond their present numbers in order to provide what the board in another connexion calls ' the discipline of work and a normal ordered life and might provide, as they already do to some extent, the treatment facilities referred to in the preceding paragraph.

* * *

The case of unemployed older women is one particularly bound up with health "Their low physical standard and lack of stamina are painfully obvious to the Board's officers and social workers who come in contact with them. Bad eyes and bad teeth are constant minor defects, but heart trouble, rheumatism and more serious organic complaints are, unfortunately, common" Many of these women "live alone in a single room which contains a few relics of a happier and more prosperous past" But no special proposal for the remedy of either the minor defects or the more serious illnesses is suggested. It also appears that younger women's health causes difficulty: "the low standard of health and energy among some of these younger applicants of the Board is a cause for anxiety and the prevalence of minor defects concerned with eyes and teeth raises once again the difficult question of effective medical treatment for unemployed persons In large cities like Liverpool and Glasgow the standard of employability among a large group of unemployed girls falls very low." Exact figures of minor defects and disabling illnesses are not given for either older or younger women and it would be useful to have them. It is clear however that on the dark side of the life of Great Britain, in which the unemployed, the "applicants" of the Unemployment Assistance Board and the "applicants" for public assistance live, and in which the family means test operates, the level of health and vitality sinks low.

To complete the picture we should need to know the state of health of the children in the families cerned The total number of children under rteen in the households of applicants to the ard was 609,000, distributed among 247,000 households; of these 422,000 were attending school. The centage of children receiving either free meals free milk at school is 35 in England, 38 in Scotland d 44 in Wales It would be valuable to have a report on the medical examination of all these children and especially on their condition as regards nutrition. Families in which there is such a large proportion of both unemployed men and unemployed women with minor defects, illnesses and what the report calls "low standard of health and energy" have presumably large numbers of children whose health is similarly impaired

FROM THE PRESS GALLERY

THE House of Commons reassembled on June 5 *after the Whitsuntide recess.*

Some Occupational Problems

On June 5 in the House of Commons, in the course of a debate on a vote of £14,514,000 for the Ministry of Labour, Mr. ERNEST BROWN, Minister of Labour, said that over 11,000,000 persons were covered by existing voluntary schemes or by the legislation under which holidays with pay could be given. New notices were coming in every day announcing action taken by industries or trade boards.—Mr TREVOR COX said that Lord Rushcliffe (chairman of the Unemployment Assistance Board) had mentioned that numbers of young men failed to obtain work because of certain physical defects, chiefly relating to the eyes and teeth, which could easily be remedied. Mr. Cox thought that the public-health services could be enlarged as to cover such cases—Mr. WESTWOOD said that as there was a shortage of nurses why should not a full course of nursing be provided for many of the unemployed young women? The necessary grants might also be given for the training of home [illegible] or health visitors.—Mr. T. SMITH returned to the point raised by Mr. Cox, and Mr LENNOX BOYD, parliamentary secretary to the Ministry of Labour promised that the Minister of Labour would consult with the Ministry of Health on the subject.

QUESTION TIME

MONDAY, JUNE 5

Advertisements in Stamp Books

SIR ARNOLD WILSON asked the Postmaster General whether the Ministry of Health was consulted before permitting the insertion in the books of postage stamps of the advertisement of a proprietary remedy for diseases of the bladder, kidney, prostate gland and rheumatism, and what sum was annually receivable by the Treasury in respect thereof—Major TRYON replied The answer to the first part of the question is in the negative, but the Ministry of Health is aware of the general policy of the Post Office regarding advertisements of proprietary remedies It is not the practice to disclose particulars of individual receipts of this kind

Students Who Register as Conscientious Objectors

Mr. GIBSON asked the Minister of Labour if he was aware that in spite of the official statement from his department issued through the press on Saturday, May 27, that undergraduates now at the universities and university colleges who were affected by the Military Training Bill would be permitted to postpone their liability to be called up for military training until not later than a month after the *conclusion of their* course of study as approved by the university, and that forms for postponement would be obtainable at the time of registration such forms for postponement on Saturday, June 3, were refused to students signing the register of conscientious objectors, though issued to students signing the military training register, and if he had any statement to make on the subject—Mr. LENNOX-BOYD, parliamentary secretary to the Ministry of Labour, replied The persons affected by this question would be those to be conditionally registered under section 3 (7) (*b*) of the act. The date from which this registration takes effect is fixed by order of the local or appellate tribunal My right hon friend is considering whether under the act and the powers given by the act this point can be met.

Spirits and Primitive Tribes

Mr. WISE asked the Under-Secretary of State for India whether he would give an assurance, in the interests of the *primitive tribes of India,* who depended for their health on spirits distilled from jungle products, that governors would exercise the special powers conferred upon them, and protect the partially excluded areas from the operation of Prohibition Acts—Lieut Colonel MUIRHEAD replied: I feel sure that the governors can be trusted to bear their special responsibilities in mind when considering any proposal for the extension of prohibition to the partially excluded areas

Health of Lascar Seamen

Mr WINDSOR asked the Under-Secretary of State for India whether he could give a report on the health of lascar seamen in view of the fact that the Government of India had removed all restrictions on the employment of lascars as deck hands on vessels proceeding to the east coast of America, north of 38° north latitude and the Baltic during the winter months—Lieut-Colonel MUIRHEAD replied The removal of the restrictions to which the hon member refers applies only to the limits mentioned in sub-clause (*b*) (2) of the first proviso to the [illegible] Agreement; these limits do not include the Baltic [illegible] last September, when the restrictions were [illegible] medical reports on the health of lascar seamen [illegible] from northern latitudes have been received only from Calcutta, no such crew having been discharged at [illegible] The reports from Calcutta cover 11 vessels, and in no case are ill effects due to cold climates mentioned [illegible] for special notice The shipping master at Calcutta is of the opinion that the lascars have stood the [illegible] rell, and the Government of India consider that this pinion is justified

TUESDAY JUNE 6

Canadian Experiments in Prevention of Silicosis

Mr JAMES GRIFFITHS asked the Paymaster General, s representing the Lord President of the Council, if he ould give any information on the experiments carried ut by mining engineers in Canada into the prevention f silicosis by the disposal of quantities of metallic aluminium powder in dust clouds in mines, and whether, in iew of the success claimed for this method of prevention, e would have similar experiments conducted in this ountry —Earl WINTERTON replied The special committee advising the Medical Research Council on industrial ulmonary diseases is maintaining close contact with the anadian investigators of this method, and some related xperiments are being made here under the committee's irection

Cripples and Evacuation

Mr BROOKE asked the Minister of Health whether any ripples or invalids, other than blind people and expectant nothers, were to be regarded as coming within the priority lass of evacuees, and, if not, whether he could give lefinite public guidance to such persons as to their best nd safest course in the event of an emergency —Mr BERNAYS, parliamentary secretary to the Ministry of Iealth, replied Yes sir Adult cripples, so far as their emoval is feasible, are included among the priority classes or the purposes of the Government evacuation scheme

Bacteriological Analysis of Milk

Mr PEARSON asked the Minister of Health whether ie would request local government authorities to obtain a *standard frequency of milk samples for bacteriological* analysis so that possible existence of tubercle bacilli in milk might be effectively traced and in order to supplement the detection of tuberculosis infected animals by the veterinary staff of the Ministry of Agriculture —Mr BERNAYS replied While my right hon friend fully appreciates the importance of the examination of milk for tubercle bacilli and his department draws the attention of local authorities to the matter in appropriate cases the number of samples which it is desirable to take must vary *with circumstances* and, on *the information* before him, my right hon friend does not think it would be practicable or useful to enjoin a standard figure upon all authorities

Diphtheria Immunisation at Accrington

Mr VIANT asked the Minister of Health how many children who had been immunised at Accrington subsequently developed diphtheria, and whether there had been any fatal cases in immunised children —Mr BERNAYS replied I am informed by the town council that during the period for which records of immunisation are available, that is from November, 1935, onwards no child in Accrington who had been immunised and had subsequently given a negative reaction to the Schick test is known to have developed diphtheria The second part of the question does not, therefore, arise

X-ray Examination of Militiamen

Sir HENRY MORRIS-JONES asked the Minister of Labour whether, in connexion with the medical inspection of militiamen preparatory to training he would take into consideration the desirability that it should include an X ray examination of the chest —Mr ERNEST BROWN replied The arrangements for medical examination include provision for the services of expert radiologists in all cases in which this is considered by the medical boards to be desirable in order to establish a man's fitness for service In addition, *information in the possession of the* tuberculosis officer of the local authority will be available

MEDICAL NEWS

University of Oxford

On June 3 the degree of D M was conferred on G E Godber

University of London

At recent examinations the following candidates were successful —

THIRD EXAMINATION FOR M B B S

J A S Green (*f*), St Thos, F W Gunz (*d*), St Bart's G R Handy (*a*), Ceylon and Univ Coll R D C Johnstone (*g*) St Thos, R S Lawrie (*a d university medal*) Middlesex R S Murley (*b*), St Bart's Eva G Seaton (*d, e*), Univ Coll and P G Todd (*f*), St Thos (All with honours) S C Appleton St Thos F I C Apted St Thos L D Arden St Bart's D O Arnott St Thos G N Arthurs, London D W R Ashby, Westminster and Univ Coll, Cardiff J A Atkinson London, Mary Baker Roy Free T H Bassett, St Bart's J R Belcher, St Thos J M C Birt St Thos, A N Blades, St Thos, T P Blanshard St Bart's F M Braines, St Bart's W L W Bridger Guy's Margaret Brodigan Univ Coll A J W Brooker St Bart's Amelia E Burch Roy Free K A Butler St Bart's Mercy S Cain Roy Free Ruth C Cassell Roy Free R N Cates St Bart's A A G Clarke St George's R P Coldrey Univ Coll G B Collyer Guy's, R J Cornelius St Thos J N Cranford, London H D Croswell Middlesex A P Dale Russell Guy's Peggy M Dash Roy Free Dilys L Davies Univ Coll Cardiff H S Davies King's Coll H J de Wardener, St Thos, N J Dhondy *Grant* Medical Coll, Bombay and Univ Coll, Ursula M Dick Roy Free J F Dickson Middlesex *D M Dunn* St Bart's Marjorie O Dunster Brist, J M Elmhirst Baxter, St Bart's C J Evans Univ Coll J O Evans St Bart's, G N Faith St George's, K H P Flew, St Thos Paul Forgacs Guy's W A J Fox Westminster Gwenda M Francis Roy Free J A Gardiner Guy's J W Garraway Middlesex Harry Greenburgh, Guy's Sydney Grossmark St Bart's, L B Gunn St Thos J T A Hackett St Bart's J A F Hamilton St Bart's D H Harrison St Thos W M R Henderson St Thos Jack Herbert Burns Univ Coll Rose Hertz Roy Free C J C G Hodson, St Mary's F O Hollands St Bart's Mary C Hopper Roy Free C W Horncastle King's Coll N C Horne King's Coll, R F Horton Guy's, Beryl C James Roy Free S T H Jenkins St Bart's S J Johnson, Univ Coll R G H Jones Univ Coll J A Kennedy Univ Coll, C W Keeson Guy's, J R Kilpatrick Guy's, Harry Kopelman St George's H G Langley, London R P Lawton St Mary's H A Lee Guy's A D Lewis St George's N L McNeill Guy's R I D Markillie, St Thos I J Mathias Guy's R W Maxwell Univ Coll D L Meredith Guy's J R Miles Guy's, Mary L Mittell, Roy Free, P W Nathan Middlesex C D Needham Middlesex J H F Norbury, St Thos S P S Oswald St Thos, Stella A Parikh Roy Free A C D Parsons Westminster Dorothy K Paterson Roy Free, J H Paterson Univ Coll M V I Peiris Ceylon, St Thos and King's Coll, Nancy Perry Univ Coll G L Pett St Thos, A B Pollard St Mary's, Felix Post St Bart's C F Quin, Charing Cross, Matthew Radzan King's Coll H M Rice, Westminster N C Rogers, St Bart's, Jack Ruble King's Coll Leslie Saunders, Middlesex R F Savidge St Bart's, Sidney Shaw, Charing Cross, D G Sheffield St Thos Barbara J Shorting Roy Free, V S Shuttleworth St Bart's J D Sidey St Mary's J H Slayter, St Thos Peter Smith, St Thos, Josef Sondheimer London David Stafford Clark Guy's, O J Stewart Guy's, P D Swinstead St Bart's, W N Taylor St Bart's, Dhari Tumrasvin Guy's P M Ward Westminster G R Waterman, London John Watkins-Pitchford St Thos Francis Whitwell St Thos J H Williams Guy's, J H Williams, St Bart's B D R Wilson, St Thos Elsie A K Wilson Univ Coll Hermann Wolfsohn Univ Coll Diana F Barbour King's Coll Patience F Barclay Roy Free Mary B Bensusan Butt Roy Free, H F Bentley Charing Cross, R A Blair London Elizabeth Broadhead, Roy Free T H W Clarke St Bart's P J Cutler Univ Coll, J N Davies Univ Coll A R Dearlove St Bart's William Donkin, St Bart's R G Evans King's Coll T L Frankel St George's Peter Frankel, St Bart's Kathleen M French Roy Free L A Glinson St Bart's G L Haine St Mary's, A W J Hetreed St Mary's C A Jackson St Bart's G M Killpack St Mary's R A King London, P D C Kinmont King's Coll *Dorothy M S Knott* Roy Free *Joan A Laughlin* Univ Coll G D Lumb St Bart's, Leslie [illegible] Guy's Samuel Oram, King's Coll Catherine F Pimm, Univ Coll, R C Robinson Guy's, A F Russell King's College T D Spencer Charing Cross W M Stephens King's Coll Katharine W Stuart, Roy Free, W F T Tatlow, St Bart's Norah G Taylor King's Coll J L Temple St Bart's Elsie M Terry Roy Free R D Tonkin St George's Elizabeth Topley Univ Coll F G Tucker King's Coll, A J Talker Guy's A F Wallace King's Coll and F H Wild King's Coll

(*a*) Distinguished in pathology
(*b*) Distinguished in forensic medicine and hygiene
(*d*) Distinguished in medicine
(*e*) Distinguished in applied pharmacology and therapeutics
(*f*) Distinguished in surgery
(*g*) Distinguished in obstetrics and gynaecology

The following students have passed in the groups or parts shown below —

Group I (under old regulations) —I H Bar[illegible] [illegible] J A [illegible] F K [illegible] M M A [illegible] J R

Caldwell, P T Chopping, Patricia G Cooper, G S Cross, A. R Darlow, Michael Dean, H H Dickson, A. J Drew, G. R Fearnley, Betty Fox, Oliver Garrod, Kathleen M Harding, R J Harrison, W R L Harrison, G C Haywood, W. H. James, M A K Javid, F H Lee, Geoffrey Levy, G O Mackay, J. B Mitchell, J. R. Odell, M J. Pleydell, Hyman Pomerantz, H. I H. Porcher, T M L Price, H V Reeves, C H J Rey, J. D Rochford, Constance M B Shaw, H D Smith, M R. J. Snelling, I M G. Stewart, R A R Topping, L H Turner, H D. Venning, and Emrys Williams

Group II (under old regulations) —D. L Bennett, Anna M Berry, H J Bliss, A D Bone, A G N Calder, Jack Colover, C M Craig, D. A Ferguson, H. R W Franklin, J. B Franklin, A. L Frazer, R C. Fuller, J. R. Hudson, J. F. Hughes, J C A. Innes, J P. Irwin, G C A Jackson, H H W Jackson, D. C R R. Jenkins, J. B Kershaw, A. H Knight, Barnett Levin, J. S. Lillicrap, I D. MacDonald, L. A H McShine, M L Mason, A D. Newsholme, J L Penistan, F L Potter, J R E Richardson, P B Riley, P R. Stringer, C K Warrick, N. N Wilson, and C. W B Woodham

Part I (under revised regulations) —J J L Ablett, R H. Anthony, Ruth P Armstrong, Elizabeth K Baker, P B Banaji, Eileen Bayley, Margaret Bennett, Geoffrey Boven, R. F. Braithwaite, Winifred C M. Bulkeley, Jean R C Burton-Brown, Isabella S Chalmers, R P Crick, I R Davies, N. H. Desai, S W. Dunkin, F L Dyson, P M Elder, S D. Elek, Enid J. Fair, G R Fisk, Lilias M P Gairdner, S S B Gilder, F J Gillingham, C W Griffiths, Jean M Holtzmann, R V Jones, R R Klein, D C. Lewin, Frank Luckett, H F Lunn, Arthur Mackler, B U Meyer, E W. Miles, D A Miln, Margaretta D.-Morrell, Donald Munro-Ashman, C W Peck, A S S Playfair, Constance J Pollard, Peter Pringle, Mary L Rae, J D Randall, J E Richardson, Ernst Rosenbaum, R J Russell, P. T. Savage, J. C Scott-Baker, D W Shields, G F Smart, B J D Smith, S C F Stephenson, Edith Taylor, Gwendolen M G Thomas, Helen P Wainwright, Marguerite Watts, May D. Westerman, Elizabeth Whatley, J F Williams, B W Wood, Hugh Wormald, Helen M Wright, Muriel C Yates, and W. J Zorab

Part II (under revised regulations) —Harold Auger, Rosalind S Barclay, A C Bingold, M W Harvey, Jean M Holtzmann, S H Lucas, A S Oscier, G A Robinson, Ernst Rosenbaum, R. W B Scutt, Margaret M Shrubsall, Joyce R Simmons, F M. S Smith, and Alice Yates

Part III (under revised regulations).—Jean M. Drury-White and D J. Paddison

British Postgraduate Medical School

At 4.30 P M. on June 27, July 4, 11, and 18 in the department of medicine, Sir Arthur Hall will lecture on meningitis and acute infections of the central nervous system. On June 23 at 2.30 P.M , in the department of surgery, Mr. J B Hume will give the first of five weekly lectures on hernia and its treatment. Prof Vernon Mottram and Dr. A. A. Moncrieff will give four lectures in the department of obstetrics and gynæcology, beginning on June 29 at 3 30 P M. The lectures will deal with the hygiene of the newborn child. Application for tickets for these lectures should be made to the dean of the school, Ducane Road, W.12.

Joint Tuberculosis Council

At a meeting of the council held in London under the chairmanship of Dr. S. Vere Pearson on May 20, Sir Percival Hartley was introduced as the representative of the National Association, in place of Dr F. J C Coutts resigned Dr. R R. Trail had been appointed by the British Medical Association to succeed Dr. F. W Goodbody (deceased) as its representative. The Faculty of Radiologists had accepted representation on the council After discussion it was agreed to appoint a committee to inquire into closer coöperation between the National Association, the Tuberculosis Association, and the Joint Council; Dr. Pearson, Sir Wilson Jameson, Dr. Ernest Ward, Dr. G. Jessel and Dr. J. B McDougall were selected to meet members of the other two organisations. The following committees were set up (convener in parentheses). Finance and Publicity; Employment and Aftercare (Dr. F. R. G Heaf and Dr. McDougall), Gold (Dr. R L Midgley); Milk (Dr. C O. Hawthorne), Nursing (Dr Esther Carling); Overseas (Dr. Pearson), Postgraduate Study (Dr. Heaf); Organisation in War-time (Dr. J Watt), Infection and Books (Prof W. H Tytler), Major Surgery (Mr J E. H Roberts); Children in Institutions (Dr Peter W. Edwards). It was decided to ask the Medical Research Council to include more clinicians and members of the tuberculosis service on its tuberculosis committee. Dr. D. A Powell and Dr. G Lissant Cox were asked to report how far the lessons of the Welsh inquiry applied to the country as a whole. On Dr Heaf's request for a new definition of the term "quiescence" he was asked to convene a committee to revise the definition of a number of other terms in common use in tuberculosis practice

Wingfield-Morris Orthopædic Hospital, Oxford

Applications are invited for the Lord Nuffield scholarship in orthopædic surgery tenable at this hospital Further information will be found in our advertisement columns.

Memorial to J. L. Joyce

A fund is being raised by the Royal Berkshire Hospital, Reading, as a memorial to the late Mr J. L Joyce, who was senior surgeon to the hospital. It is proposed to name the operating-theatre attached to the new Nuffield block the Joyce operating-theatre. Donations may be sent to the chairman of the hospital.

Royal Society of Tropical Medicine and Hygiene

At the annual general meeting of this society at 8.15 P.M. on June 15 at 26, Portland Place, London, W1, Sir Rickard Christophers, F.R S., will be inducted as president in succession to Colonel S P James, F R S , who is retiring.

The Chalmers medal will afterwards be presented to Dr Max Theiler of the international health division of the Rockefeller Foundation, New York, in recognition of his fundamental work on inoculation against yellow fever.

Congress on Social Medicine

The Journées Internationales de Médecine Sociale will be held at Liége from June 23 to 25 under the presidency of Prof G Timbal (Louvain) Prof J Leclercq (Lille) will compare the legislation for workmen's *compensation* in different countries; Dr Robert [illegible] (Luxemburg) will discuss the place of the practitioner in social medicine; and Prof René Sand (Brussels) will speak on the cost of sickness. Further particulars may be had from Prof. J. Firket, 1, rue des Bonnes Villes, Liége, Belgium

Clean Milk in Ireland

Our Dublin correspondent writes · The Clean Milk Society, after existing some thirteen years, has decided to wind itself up. The society was founded to carry on a campaign in favour of clean milk, and it was due to its activity that the Government was persuaded to frame legislation to control dairies and safeguard the public milk-supply. Moreover, the criticism by some members of the society of the first bill put forward by the Government led to the substitution of a much more useful measure. The present laws are fairly satisfactory, but reports of the county medical officers of health throughout the country and, still more, information gained from unofficial sources make it seem that the administration of the act is far from rigorous Since this rests with the local authorities, there is still room for propaganda in favour of clean milk. It will therefore be a matter of regret to some that the Clean Milk Society has abandoned its educative work, for only the pressure of public opinion will secure efficient administration.

League of Nations Pharmacopœial Commission

A meeting of the technical commission of pharmacopœial experts, of which Dr. C H. Hampshire of London is president, was held at Geneva from May 10 to 16 Drafts of 85 monographs which had been prepared by members of the commission since the last meeting were presented for consideration. These were classified into groups of similar substances, such as alkaloids and alkaloidal salts, cinchona alkaloids, crude drugs, the digitalis group, the mercurial compounds, and certain monographs from each group were selected for detailed discussion The commission formed themselves into small groups for the investigation of specific problems which arose in the course of discussion Among these were the tests for purity of quinine salts, the standardisation of ergot and its preparations, the alkaloidal assays of crude drugs, and the ash content of crude drugs Individual members undertook to report on other subjects, such as the terminology relating to solubilities, thermometers, standards for colour and absence of turbidity, limit-tests for heavy metals and other inorganic impurities, sterilisation of solutions for injection, neutrality reactions of alkaloidal salts, the assay of acetylsalicylic acid, and various solubilities of alkaloids. Draft recommendations for usual and maximum doses of certain drugs were adopted, and a tentative list of international names was drawn up.

harmaceutical Society of Great Britain

At a council meeting of this society on June 7 Mr alter Deacon, a Bridgwater pharmacist, was elected esident in succession to Mr Thomas Guthrie, who has signed from the council

iddlesex Hospital

At 4 30 P M on June 27 Sir Robert McCarrison will eliver the second Sanderson Wells lecture at this hospital e will speak on deficiency diseases

ritish Pharmaceutical Conference

The seventy sixth meeting of the British Pharma utical Conference will be held at the University of irmingham from July 17 to July 21

ravelling Scholarship in *Dermatology*

A Radcliffe Crocker travelling scholarship in derma- ology, which is worth about £280 and is tenable for elve months, will shortly be awarded Further articulars appear in our advertisement columns

ational Association for the Prevention of Tuberculosis

Lord Craigavon, the prime minister of Northern Ireland, ill open the twenty fifth annual conference of this ssociation, which is being held in the College of Techno- gy, Belfast, from June 29 to July 1, under the presidency f the Marchioness of Titchfield Dr Andrew Trimble, r W L Yell, Dr Peter Edwards, Dr B R Clarke, and r Brendan O'Brien will open a discussion on the rganisation and local administration of tuberculosis chemes Dr G Jessel, Dr F S Hawkins, Dr Dorothy rice, and Dr W M MacPhail will speak on tuberculosis n the adolescent Dr J B McDougall and Mr B ubetkin, A R I B A, will discuss architectural problems n connexion with tuberculosis institutions The third day f the meeting will be devoted to demonstrations and tours, hich will include a clinical X ray and pathological emonstration by Dr James Shaw at the Central Tuber- ulosis Institute, Belfast, and a visit to Graymount Hos ital and to Whiteabbey Sanatorium, where Dr P Walker ill give radiological clinics on chronic adult phthisis in hildren and chronic submiliary tuberculosis Another isit will be to Forster Green Sanatorium, where Mr R B Purce and Dr S L W Erskine will give emonstrations Further information may be had from he secretary of the association, Tavistock House North, avistock Square, London, W C 1

oyal Sanitary Institute

The annual health congress of this institute will take lace at Scarborough from July 3 to 8 under the presidency f the Earl of Harewood The work of the congress will be divided into seven sections and conferences of representatives of local authorities, sanitary inspectors, medical officers of health and of health visitors will be held in connexion with it In the section of preventive medicine a presidential address will be given by Prof R M F Picken while Dr J A Charles and Dr A C Tibbits will open a discussion on the reorientation of the public health services. Dr W A Lethem will speak to representatives of local authorities on evacuation schemes Sir Wilson Jameson will preside over the section of tropical hygiene and he has chosen as the subject of his address rural hygiene in the tropics It will be followed by a discussion Dr Elwin Nash will preside over the conference of medical officers of health, and Sir Arthur MacNalty Mr G F Stebbing, and Dr John Buchan will open a discussion on the Cancer Act 1939 In the section of maternity child welfare, and school hygiene, Dr D R MacCalman Dr H Edelston, and Dr F J S Esher will contribute to a discussion on family discords Sir Henry Bashford will address the section of hygiene in industry on sick absence in industry, and Dr T O Garland will plead for a broader conception of hygiene in industry Dr Charles Hill will ask the appropriate section Whither National Health Insurance? Dr W G Booth and Dr T N V Potts will discuss health visitors and midwives in relation to air raid precautions at the conference of health visitors Further information may be had from the offices of the institute 90 Buckingham Palace Road, London S W 1

Scholarship in Radiology

Particulars will be found in our advertisement columns of the Chester Beatty scholarship in radiology which is offered for the purpose of studying radiology in the United States

Standard for Burettes

The British Standards Institution has now issued a standard specification for burettes and bulb burettes The specification covers a range of burettes from 1 ml to 100 ml capacity, and bulb burettes from 45 ml to 105 ml capacity It contains particulars of the material to be used and of the dimensions and tolerances, as well as of the delivery time, jets, stopcocks and graduation marks It also provides for the marking and testing of the burettes, of which there are two grades Copies may be obtained from the institution at 28, Victoria Street, S W 1, price 2*s* 2*d* post free

Oxford Ophthalmological Congress

This congress will be held at Keble College from July 6 to 8 After his installation as master, Mr Percival Hay will read *an address of welcome, and* Mr T Keith Lyle and Mr Frank Law will open a discussion on orthoptic training The afternoon will be devoted to short papers and demonstration of cinematograph films On July 7 Dr J Douglas Robertson will put forward evidence in favour of the theory that the aqueous humour is produced by a process of secretion, and Mr Thomas Henderson will discuss how a hyphæma or a hypopyon is resorbed The Doyne lecture will be delivered by Mr F A Williamson Noble who will describe the ocular consequences of certain chiasmal lesions On July 8 Mr T Harrison Butler will open a discussion on miners nystagmus Further information may be had from the hon secretary, Dr F A Anderson, 12, St. John's Hill, Shrewsbury

Society for Relief of Widows and Orphans of Medical Men

Mr V Warren Low presided at the annual general meeting of this society on May 24 when the report and financial statement for 1938 was adopted On Oct 29 the society had, he recalled, completed an existence of 150 years The membership now is 287 Sixty two widows and five orphans are in receipt of grants and during the year a sum of £4990 was distributed amongst them Each widow over 65 years of age received £75, each widow under 65 £60, each orphan received £50 In addition each widow and orphan received at Christmas a present of £5 The income for the year was £5432, the cost of administration £371 10*s*, with a balance of income over expenditure of £70 Relief is only granted to the necessitous widows and orphans of deceased members Membership is open to any registered medical man who at the time of his election is residing within a twenty-mile radius of Charing Cross Particulars from the secretary at the office of the society, 11 Chandos Street, London, W 1

National Conference on Maternity and Child Welfare

This conference will be held from June 27 to 29 at B.M A House, Tavistock Square, London, W C 1 Mr Walter Elliot, the president, will deliver an inaugural address Other openers of discussion will include Dr Gertrude Dearnley and Dr C K J Hamilton who will speak on safety in childbirth for mother and child, Dr J C Spence and Dr Harold Waller (the encouragement of breast feeding) Dr Marguerite Hughes and Dr J L Burn (problems of the nursery school, the nursery-class and the day nursery), Dr P V Pritchard (the child in relation to the foster mother); Dr Grace Calver (problems of parents with a physically defective child), and Dr D H Geffen and Dr I Catherine Morris Jones (propaganda as a means of developing maternity and child welfare work) The secretary of the conference may be addressed at Carnegie House 117 Piccadilly London W 1

The maternity and child welfare group of the Society of Medical Officers of Health has arranged a clinical course for medical practitioners in connexion with the conference to be held on June 23 and 26 Those who wish to attend should write to Dr E V Saunders-Jacobs, Town Hall Woolwich S E 18, before June 14

Medical Diary

June 12 *to June* 17

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1

TUESDAY —5 30 P M, general meeting of fellows

Psychiatry 8 30 P M, Dr G de M Rudolf, Dr Noel Harris, and Dr W Clifford Scott: The Chronic Uncertified

FRIDAY

Comparative Medicine 2 15 P M (Institute of Animal Pathology, Milton Road, Cambridge), demonstrations

Obstetrics and Gynæcology 8 P M, Prof James Young · Pelvic Osteoarthropathy in Pregnancy Mr P Malpas and Mr C K J Hamilton Effect of Pelvic Inclination, Sacral Inclination, and Sacral Shape on the Passage of the Head through the Upper Pelvis Dame Louise McIlroy Mistaken Diagnosis of Malignancy in a Case of Ovarian Cysts Mr T F Todd. Utero-abdominal Fistula in a Young Woman

Laryngology Otology 9 30 A M. (Royal Hospital, West Street, Sheffield), Mr Herbert Tilley and Dr Leslie Powell: Osteomyelitis of the Frontal Bone Mr F C Ormerod: Treatment of Pain in Tuberculous Laryngitis Mr John Simpson and Mr R R Simpson Anæmia with Dysphagia a Pre-cancerous Condition?

SATURDAY

Laryngology Otology 9 30 A M, Mr A G Wells, Dr P M Kerridge and Dr T C Lonie Ear Disease in the Child Mr Musgrave Woodman The Position of the Portmann Operation in relation to Labyrinthine Vertigo Mr C S Hallpike and Mr A J A Wright. Histological *Changes in the Temporal Bones in Menière's Disease* 2 30 P M (Royal Infirmary, Sheffield), clinical meeting

Disease in Children 2 15 P M (Leeds General Infirmary), demonstration of cases

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W 1

THURSDAY —8 15 P M, annual general meeting 8 45 P M, Dr G A H Buttle · Sulphanilamide and its Derivatives with special reference to Tropical Medicine

KENSINGTON MEDICAL SOCIETY

WEDNESDAY —8 30 P M (St Mary Abbots Hospital, Marloes Road, W 8), Lord Horder The Mental Aspects of Physical Disease

RESEARCH DEFENCE SOCIETY

TUESDAY —3 P M (*London School of Hygiene*, Keppel Street, W C 1), Sir Edward Mellanby, F R S *The Experimental* Method in the Conquest of Disease (Stephen Paget lecture)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W C 2

MONDAY —5 P M, Dr D W Gordon Murray. Heparin in Thrombosis

WEDNESDAY —5 P M, Mr George Armitage Gastroscopic Observations on the *Healing of Chronic* Gastric Ulcer (Hunterian lectures)

CHADWICK LECTURE

THURSDAY —5 30 P M (Chelsea Physic Garden, Swan Walk, S W 3), Prof R Ruggles Gates, F R S Plant Genetics *and Human* Welfare.

ST BARTHOLOMEW'S HOSPITAL, E C 1

THURSDAY —1 30 P M, medical cases 3 P M, surgical cases 4 30 P M, X-ray demonstrations

FRIDAY —10 A.M, Dr George Graham The Treatment of Adiposity 11 A.M, Prof Geoffrey Hadfield · The Collection and Transmission of Pathological Specimens NOON, Dr A C Roxburgh. demonstration of skin diseases 1 45 P M, Mr H G Bedford Russell · Treatment of Acute Infections of the Upper Respiratory Tract 2 45 P.M, Mr W E Underwood and Mr H W Rodgers Treatment of Acute *Infections* of the Hand and Fingers 4 P M, Mr S L Higgs. Back Ache

SATURDAY —10 A M, *Dr Geoffrey Bourne* · Common Causes of Palpitation and their Treatment 11 A M, Mr F T. Evans · Newer Anæsthetics NOON, Dr W M Levitt Deep X-ray Therapy 1 45 P M, Dr K D Keele Pain—its Clinical Significance 2 45 P M, Dr E F Scowen · Fallacies of Endocrine Treatment 4 P M, Mr James Coutts, Ph D · New Drugs and Preparations

The course is open to all medical men

ST. MARY'S HOSPITAL, W 2

TUESDAY —5 P.M (*institute* of pathology and research), Sir John Orr, F R S · Nutrition in Relation to Therapeutic and Preventive Medicine

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12

MONDAY —4 30 P M, Dr R C Wingfield Pulmonary Tuberculosis

WEDNESDAY —NOON, clinical and pathological conference (medical) 2 P M, Dr T C Stamp. The Bacteriological Diagnosis of Gastro-intestinal Infection (I) Enteric and other Salmonella Infections 3 P M, clinical and pathological conference(surgical) 4 30 P M, Prof H W C Vines: Pathology of the Adrenal Glands

THURSDAY —2 15 P M, Dr Duncan White radiological demonstration 3 30 P M, Mr Alec Bourne. Salpingitis

FRIDAY —2 P.M, clinical and pathological conference (obstetrics and gynæcology) 2 30 P.M, Mr Charles Donald Acute Pyogenic Infections

Daily, 10 A M to 4 P M, medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations

TAVISTOCK CLINIC, Malet Place, W C 1

MONDAY —6 P M, Dr Emanuel Miller The Psychotherapy

WEDNESDAY —3 P.M, Dr Cedric Shaw. Differe nosis 4 30 P M, Dr H Crichton Miller Impo

THURSDAY —6 P M, Dr Alan Maberly Disorders of hood—Obsessional and Allied Disorders, Temper, Wandering

HOSPITAL FOR SICK CHILDREN, Great Ormond St., W C 1

THURSDAY —2 P M, Dr Bertram Shires The Inter of X Rays in Diseases of Childhood 3 P.M, demo in the electrotherapy department

Outpatient clinics daily at 10 A M and ward visits at

ST GEORGE'S HOSPITAL, S W 1

THURSDAY —5 P M, Dr Anthony Feiling neur demonstration

WESTMINSTER HOSPITAL, S W 1

TUESDAY —5 P M, clinicopathological demonstration

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street W 1

MONDAY to SATURDAY —ST MARY'S HOSPITAL W 2, Tu and Thurs, 8 P M, clinical and pathological M R C P course —BROMPTON HOSPITAL, S W 3, Tues and Mon and Thurs, 5 15 P M, M R C P course in ch diseases —LONDON CHEST HOSPITAL, Victoria Park E Wed and Fri, 6 P M, M R C P course in heart and diseases —WEST END HOSPITAL FOR NERVOUS DIS Welbeck Street, W 1, afternoon, M R C P course neurology —CHELSEA HOSPITAL FOR WOMEN, Street, S W 3, all-day course in gynæcology—P HALL, near Maidstone, Kent, Sat, demonstration pulmonary tuberculosis

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION

WEDNESDAY —4 P M (St James' Hospital, Ouseley R S W 12), Dr W G Barnard The Present Position of Cancer Problem

Appointments

BULMAN, H A, M R C S, D P H, medical officer of h for Marylebone

DONALDSON, MALCOLM, M B Camb, F R C S, F R C O physician accoucheur to St Bartholomew's Hos London

HUSS, C B, M B Lond, D P H, deputy medical officer health for Twickenham

LANDER, F P LEE, M D Lond, F R C P, hon phys Putney Hospital

PRITCHARD, W A, M B Lond, assistant medical officer Warren Road Hospital, Guildford

REES, D F, M R C S, resident assistant medical officer Battle Hospital, Reading

SUTHERLAND, H A., M B Glasg, assistant medical officer County Mental Hospital, Gloucester

London County Council —The following appointments transfers are announced (A M O (I) or (II) = a medical officer class I or class II) —

WHEATON, C E W, M D Lond, M R C P, deputy med superintendent (class I) at Lambeth Hospital,

HOLMES, S W, M B Lond, F R C S, senior A M O St Peter's Hospital,

TANNER N C, M B Brist, F R C S, senior A M O St James' Hospital,

LATTER, ROSALIND B, M B N Z, M R C P, A M O St Stephen's Hospital, and

BROWNE, OLIVE M, M B Edin, A M O (II), High Wood

Examining Surgeons under the Factories Act, 1937 Dr W McLINDEN (Oldham, East, District, Lancaster) Dr KITCHING (Wetherby District, York, W R), Dr J HAMILTON (Bothwell District, Lanark)

Vacancies

For further information refer to the advertisement colum

Aberdeen Royal Infirmary —Surgeon in charge of ra therapy, £800

Arlesey, Beds, Three Counties Mental Hosp —Sen. a M O, £650

Association of Surgeons of Great Britain and Ireland, 50, *Street*, W 1 —Moynihan fellowship, £350

Barbados General Hosp —Radiologist, £800 Also H S anæsthetist, £450

Bath, Royal United Hosp —H P, at rate of £150

Bedfordshire County Council —Asst M O H, maternity child welfare, £500

Berkshire County Council —Asst M O, £500

Birmingham City —Temporary asst M O H, at rate of Also asst res M O in tuberculosis section, £450

Blackburn Royal Infirmary —Res H S, £175

Brighton County Borough —Sen M O and asst to M O H, £

Cambridge, Addenbrooke's Hosp —H P, at rate of £1

Canterbury, Kent County Mental Hosp, Chartham —Jun M O, £350

Charing Cross Hosp, W C 2 —Cancer and radium £100 Also clin asst to dermatological dept asst to X-ray and electrotherapeutic dept each £

Charterhouse Rheumatism Clinic, 56, *Weymouth St* Hon clin assts

Chelsea Hosp for Women S W 3 —Anæsthetist M O H, £

Derbyshire County Council —Asst county M O H, £

Derbyshire Education Committee —Asst school M O, £

Lady Ruth Balfour and Dr Watts Eden express a issentient opinion, they think "it would be esirable in the public interest that medical officers charge of clinics maintained by local authorities hould be permitted to give birth control advice and eatment to married persons who desire to limit or ace their families for economic reasons"

The committee as a whole realises that measures eking to relieve the financial difficulties associated ith childbirth and parenthood represent a sound pproach to the problem A particular measure to hich it draws attention is improvement of the unicipal maternity services, but it also mentions com-ulsory payment of family allowances among other ossible means of lessening resort to abortion Also the positive side it is suggested that social workers hould combat "the tendency in some quarters to gard parents of several children as unfortunate" he importance of the family as a unit of social life, ad its value as a source of happiness, should be mphasised While the public should be instructed bout the nature and consequences of criminal bortion they should also be made to realise that aternity is not as dangerous as they are sometimes d to suppose Steps should likewise be taken to lucate public opinion into a more humane and lightened attitude towards unmarried mothers

Other recommendations relate to the sale of so called bortifacient drugs, this is described as "a fraudulent xploitation of the mental distress of the women who uy them in the anticipation that they are likely to e effective", and their indiscriminate use may ndanger health and life The development of research the new synthetic œstrogens should be closely ollowed and if, as is expected, these prove effective r the termination of early pregnancy, their sale ill have to be controlled and restricted It is roposed that existing facilities for carrying out regnancy diagnosis tests should be reviewed with e idea of making them more generally available respective of income

A minority report by Mrs Dorothy Thurtle favours uch wider dissemination of advice on birth control, artly through gynæcological clinics of the kind roposed by Dr Joan Malleson, who submits a emorandum (see *Lancet*, Feb 11, 1939, p 366) rs Thurtle thinks it would probably be well to galise voluntary abortion for women who have ad four pregnancies (continuing until the fœtus as viable), and she would also legalise the operation cases of rape under the age of sixteen and in ertain other circumstances, in cases of incest, and cases where sterilisation would have been advisable he can conceive no penal deterrent that will be ffective, and submits her proposals as a means of reventing crime "in the sense of removing from omen the necessity to resort to it"

PHASES OF LOVE

Dr Sloan Chesser has set down a series of jottings hich present a broad and effective survey of the hysical and psychical aspects of love[1] She quotes ery few other writers but draws almost entirely pon her own thought and experience, she has learly had occasion to observe and listen to persons f many types Her attitude is elastic and tolerant ut her sympathy with the modern young has not ffected her sense of values Each of the five parts f her book is illustrated with examples from her own case-records She is emphatic in her advocacy of continence during adolescence, favours early marriage whenever possible and gives some depressing pictures of the results of promiscuity during youth Her insistence that a successful marriage is nearly always the outcome of hard work and constructive coöperation on the part of both husband and wife will not be disputed, and it is now agreed, too, that the degree of concord between the parents influences the mental stability and ultimate good citizenship of their children Dr Sloan Chesser has some sensible things to say about abortion, prostitution and sexual perversions and deals sympathetically with the climacteric and old age

A CROMWELLIAN MAJOR-GENERAL[1]

Sir James Berry has been inspired to devote some of his well-earned leisure to the compilation of this account of one of his ancestors, that James Berry who rose to distinction in the troubled times of the Great Civil War The volume is the more welcome because it deals mainly with events in the political history of Cromwell's dictatorship, and the extremely intricate movements which immediately preceded the Restoration, a period of which our information has been, and still is, in many respects defective The authors believe that this is the first study of the administrative details of the activities of the eleven major-generals to whom in 1655 Cromwell entrusted the civil and military rule of England and Wales

Of James Berry's life before he joined the army but little is known He was a puritan, and must have had some previous military experience, for as early as 1643 he was already an officer in Cromwell's own troop of horse He served in this capacity throughout the years of the first civil war, and in 1651 was promoted to the command of his own regiment He had fought in the north and in the west, and was at Dunbar with Cromwell When the fighting was over he was employed in military and civil administrative posts with his regiment, till on the breakdown of Cromwell's attempt to govern by means of a parliament the Protector divided the whole of England and Wales into districts with a major-general at the head of each district Berry's district included Shropshire, Worcester, Hereford, North Wales and after the first few months South Wales as well Of this period there are several of Berry's letters extant, so that it is possible to construct a detailed picture of the methods he employed, and the difficulties he encountered The war had practically brought to a standstill all the public life of the country, and it was Berry's task to attempt the restoration of civil justice, and local administration in counties where the Royalist party had been strong, and the breakdown therefore more complete Moreover in these years there were constant conspiracies and plots against the Protector, and in favour of the Stuarts, and part of Berry's duties was to exercise a rigid supervision over all suspects, and over such seemingly innocent amusements as race meetings and parties for hunting In addition he had to see that the heavy taxes imposed on the Royalist gentlemen were properly paid He appears from his letters to have been lenient wherever it was possible and on the whole to have discharged his duties efficiently The system was pursued until the ensuing parliament in 1657 refused to vote the supplies necessary to carry on the rule of the major-generals Berry was by this time a member of parliament and in the following period, especially after the death of Cromwell, took an active lead in the "army party" which was distinctly republican in tone and therefore in opposition to the bulk of opinion in the country, which as a whole favoured the Restoration The story of the vicissitudes of the "army party" and of Berry as one of its acknowledged leaders is difficult to follow, but eventually the Restoration robbed it of all influence; and Berry as a marked man spent the next twelve years of his life in prison or under restraint Finally he was released, and though he lived for many years afterwards seems never again to have played an active part in the life of his time. He died in 1691, being probably about 80 years of age.

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[1] Five Phases of Love By Elizabeth Sloan Chesser, M D London Herbert Jenkins 1939 Pp 252 7s 6d

[1] By Sir James Berry, F R C S, and Stephen G Lee Oxford At the Clarendon Press 1938 Pp 325 15s

Berry appears from these careful researches to have been a steadfast and high-principled puritan with a strong leaven of republicanism; not an outstanding leader, but a good soldier, a just administrator, and a firm friend to his neighbours and to his co-religionists. Sir James and his fellow editor are to be congratulated on this scholarly study of a representative Englishman during some extraordinarily difficult years.

STATISTICS FROM THE UNITED STATES

ACCORDING to the latest reports of the Bureau of the Census, prepared under the supervision of Dr. Halbert Dunn (Mortality Statistics, 1936, and Birth, *Stillbirth and Infant Mortality Statistics, 1936*, Washington), the estimated population of the United States in 1936 was 128,429,000. In the same year there were registered 1,479,228 deaths and 2,144,790 live births, giving crude rates of 11·5 and 16·7 per 1000 persons living. These vast figures are analysed in detail in these reports and show many interesting features. Stillbirths numbered 34 per 1000 live births and the further loss in the first year of life was 57 deaths per 1000 live births, giving a loss of 1 baby in every 11 before its first birthday (excluding abortions and miscarriages). Of every 39 deaths, 1 was due to a motor-vehicle accident, and the absolute number of such fatalities was nearly the same in urban and rural areas. Deaths attributed to cancer and other malignant tumours (142,613) were just twice as many as those debited to all forms of tuberculosis (71,527). The seasonal swing of mortality in the United States is less than that customary in England and Wales, there being a smaller rise in the States in the first quarter of the year, to which respiratory causes especially contribute, and a less pronounced decline in the summer months, for which the higher incidence in the U.S.A. of deaths due to the enteric-dysentery group and to malaria may well be responsible. The birth-rate shows only a slight seasonal trend with its maximum in the third quarter, at which time the stillbirth-rate is relatively low. Particulars relating to the latter show, for a restricted area, that 56 per cent. of stillbirths were of males, 44 per cent of females, that half of them took place in the eighth and ninth months of pregnancy, and that malformations are the only cause reported as responsible for more stillbirths of females than males. Infant mortality ranged from 42 in Connecticut to 122 in New Mexico; in the whole country it was 53 per 1000 for white children and 86 for negro; nearly half of the infant deaths took place in the first week of life, and nearly 60 per cent. in the first month.

The value of these extensive tabulations of the basic vital-statistical data would be still further enhanced, it seems to the stranger, if some official estimates of the populations of different areas could be added.

PREGNANCY AT FIVE YEARS OF AGE

Prof. Edmundo Escomel of Lima, Peru, reports a case of pregnancy in a child five years of age (*Pr. med.* May 13, 1939, p. 744). At the beginning of April last the patient, born on Sept. 27, 1933, the daughter of poor country people, was brought to the Pisco Hospital because of a large tumour of the abdomen. Dr. Lozada was amazed to find present all the signs of pregnancy, and questions elicited the information that menstruation had begun at eight months, and that at four years the breasts were developed and pubic hair present. The girl had ceased to menstruate 7½ months before, the breasts were now increased in size, Montgomery tubercles were present, and the fœtal heart could be heard to beat. Radiography confirmed the diagnosis and indicated a head-presentation. The Lima physicians who examined the child could only arrive at the same conclusion and the question of a cæsarean operation was discussed in case the small pelvis of the mother would not permit a natural birth. To Prof. Escomel additional information arrived by air-mail, together with the patient's photograph, which is reproduced in the *Presse Médicale* of May 31. At term the infant was removed by cæsarean section on May 14, when the mother was 5⅔ years old. The child weighed 2700 grammes and was well built and healthy. The mother was also well and in a very few days was expected to be able to leave the maternity clinic. The person responsible for the event is unknown, for the patient herself is a little backward and unable to give precise answers. A committee of ladies has been formed to assure the future of the mother and her child.

It may be recalled that Molitor in 1878 reported to the Royal Academy of Medicine in Belgium the case of a girl who was eight years of age when her child was born.

GYMBALL EXERCISES

To the uninitiated it may be explained that gymballs are little medicine balls about 3 in. in diameter and weighing 3½ lb., made of rubber and filled with shot. Those who have attended classes in this attractive recreative method of gymnastics for men, introduced by J. W. Bjorneby from Norway and sponsored by R StG. Harper the Olympic hurdler will be familiar enough with their use and will find the neat booklet of gymball exercises compiled by these two athletes useful for home practice. (Gymball Recreative Gymnastics. Part I. London Simpkin Marshall. 1938. Pp 37. 3s 6d) The booklet is in loose-leaf form so as to allow for additional exercises and the figures and captions are easy to follow even by the inexperienced To the complete novice, however, the value of these exercises is doubtful, for they need accurate demonstration and are more suited to the enthusiastic atmosphere of the class than the isolation of the bathroom The diagrams are interspersed with health slogans—all sound but some a trifle obvious. Our advice would be · join the classes, and then get the book.

ADVERTISEMENT OF CANCER CURES

Circular 1813, sent out by the Ministry of Health to local authorities, calls attention to section 4 of the Cancer Act, which prohibits advertisements containing an offer to treat cancer, or to prescribe any remedy for it, or to give advice in connexion with its treatment, or referring to any article in terms calculated to lead to its use in the treatment of cancer.

Subsections (4) and (5) of the section exempt from the prohibition certain advertisements, among them advertisements published only to members of a local authority or of the governing body of a voluntary hospital, and advertisements published by a local authority or by the governing body of a voluntary hospital or by any person acting with the Minister's sanction.

Under subsection (7) the duty is imposed on county and county borough councils to institute proceedings for offences, but under subsection (8) proceedings may not be instituted without the consent of the Attorney-General or the Solicitor-General.

THE *Times* AND WESTMINSTER HOSPITAL.—The weekly edition of the *Times* for May 24 contains a series of illustrated articles on different aspects of the new Westminster Hospital The administrative side and the various departments of the hospital are described by those in charge of them. Sir Stanley Woodwark gives a broad outline of its general history and Sir Adolphe Abrahams deals with the relation of student to patient. In his large coloured picture on the cover Mr. Arthur Shearing has succeeded in overcome the difficulties of giving a satisfactory bird's-eye view of the exterior.

ADDRESSES AND ORIGINAL ARTICLES

TOXIC GOITRE

WITH SPECIAL REFERENCE TO THE DISEASE IN OLDER PEOPLE

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OUR conception of the age incidence of toxic itre has radically altered in the last twenty years, r until recently many cases in middle-aged and lerly women went undiagnosed There is now idence that the disease is commoner in women er forty than below this age, whereas fifteen to enty years ago toxic goitre (or, as it was called en, exophthalmic goitre or Graves's disease) was garded as essentially a disease of girls and young omen In the first edition of a well known textbook blished in 1922 the onset is stated to be most mmonly between the ages of fifteen and thirty, d the disease is defined as a condition due to normal secretion of the thyroid gland usually asso- ated with an increase in the size of the gland, otuberance of the eyes, loss of weight, fine tremor the hands, palpitation and rapid action of the art, and general nervous irritability At that ne the effect of iodine was misunderstood, and its al administration to patients suffering from hyper yroidism was thought to aggravate the symptoms e discovery or rediscovery by Plummer in 1923 at iodine could be given in toxic goitre, not only thout harm but also with benefit, was of great lue

Of equal importance is the discovery that toxic itre in middle and old age is common, but, so ng as the diagnosis is restricted to patients present g the classical picture of exophthalmic goitre, the sease at these age periods is likely to be missed, d this is a serious error, because appropriate treat- ent is effective The age incidence and sex- cidence in 400 cases of toxic goitre seen by me tween 1930 and 1938 in private and hospital actice is shown in table I These figures indicate at toxic goitre is less common in that period rmerly regarded as the usual age incidence than in ter life 37 per cent of the patients were aged rty or less, 63 per cent were over forty, no less an 42 per cent were over fifty, and the highest cidence was in the sixth decade The sex ratio is en to be 8 5 women to 1 man, which is similar to at usually given The features of the disease, cluding the age incidence, probably vary in different arts of the country and still more in different ountries, but in the present series, made up of a roup drawn from the London area and another from the south coast, there was little difference in the age incidence in the two groups

ABLE I—AGE INCIDENCE AND SEX INCIDENCE IN 400 CASES OF TOXIC GOITRE

Age	Female	Male	Age	Female	Male
1–10	1	0	51–60	91	12
11–20	27	1	61–70	50	9
21–30	47	8	71–80	7	0
31–40	57	7	—	358	42
41–50	78	5			

Symptoms and Signs

It will be convenient first to consider those symptoms which are characteristic of classical exophthalmic goitre and to see how they are represented in the older patient

THE THYROID

In the girl and young woman with toxic goitre the thyroid is, as a rule, definitely enlarged and the swelling in the neck obvious at a glance In fact a definite clinical enlargement of the thyroid is almost essential to the diagnosis of toxic goitre in a woman under thirty Most often it is diffusely enlarged and smooth In the older patient, on the contrary, the neck may have to be examined carefully by inspection and palpation before any abnormality can be made out The thyroid is very frequently small, hard, and nodular, it is often only palpable low in the neck in the suprasternal notch The patient should be asked to swallow, when a small nodule, just palpable with the tips of the fingers dipping deep into the notch, may be felt to rise with the trachea and become more definite Palpation must be used as well as inspection and many small firm nodular goitres are missed because hasty inspection only is employed If after examination in this way no goitre is discovered, it is unlikely that one will be revealed by radiography of the chest, for, although there are goitres situated entirely in the chest behind the upper sternum and even at lower levels, they are rare The goitre that is visible radiographically as a retrosternal mass is with few exceptions palpable in the suprasternal notch especially if the effect of swallowing is investigated It is probable that the abnormality of the gland has been present for many years, and in many cases the patient will admit to having had a goitre since her teens or twenties In others she will not be aware of any lump in the neck, but will recall having had one in early life, but "it went away" Parkinson and Hoyle (1934) elicited a history of goitre for fifteen to forty five years in 33 of 68 cases The question arises whether or not a cervical goitre may be present in the absence of any palpable or visible enlargement There is no doubt that such undetectable goitres do exist Sometimes there is a firm indurated feeling of the tissues in front of the trachea without any swelling, in others the neck looks and feels normal in every respect This is, however, a condition more likely to be found in the male than in the female It has been generally agreed that there may be no clinical enlargement of the gland, but it is also true that actual enlargement is not invariable in toxic goitre The following case illustrates a severely toxic thyroid well within the normal limit of weight, though the histological picture was abnormal

A woman, aged 42 was admitted to hospital in March, 1938, complaining of palpitation, nervousness, and tremor for a few months For three days she had had pains in the region of the right costal margin passing through to the back and she had become jaundiced On examination there was exophthalmos and tremor of the hands there was no wasting and no goitre visible or palpable, but the pretracheal tissues felt indurated; the heart-rate was 104, and auricular fibrillation was present, a long diastolic rumbling murmur characteristic of mitral stenosis was audible at the apex; there was tenderness below the right costal margin but nothing was palpable in the abdomen; no signs of heart-failure. Van den Bergh reaction: delayed direct positive and indirect weak positive. Two weeks later the heart-rate was 150, in spite of treatment with digitalis. Basal metabolic rate +35 per cent.; radiography showed moderate enlargement of the heart to the left and right; pulmonary artery prominent; left auricle only slightly enlarged. Cholecystography gave a normal shadow. A diagnosis of toxic goitre and mitral stenosis was made; the pain over the liver and the jaundice could not be *attributed to* these conditions, and their cause remained uncertain.

June 16, 1938: *total thyroidectomy (Mr. N. F. Adeney)*; gland adherent and of the consistence of rubber; weight 12 grammes; section showed "relatively little colloid and marked hyperplasia of intra-acinar cells and some increase in vascularity" (Dr. William McNaughtan). Six days after the operation the irregular rhythm of auricular fibrillation gave place to a rapid regular rhythm of 160 with pulsus alternans; *electrocardiogram* showed auricular flutter; the next day impure flutter was present, and two or three days later normal rhythm returned. The B.M.R. a month after the operation was −15 per cent. In November, 1938, the patient was at work; pulse-rate 60, normal rhythm; slight signs of myxœdema; mitral diastolic murmur still present.

THE EYES

The very conspicuous ocular changes, which are characteristic of toxic goitre in young women and make diagnosis possible at a distance, are exophthalmos and retraction of the lids (fig. 1). These may be separate or combined, unilateral or bilateral. Retraction of the lid alone gives an illusory appearance of prominence of the eye, but *according to Pochin (1938) it is not difficult to discriminate between the* two conditions When the upper lid is retracted, the sclera is exposed above the cornea; and, when the eye is closed, the upper lid shows a horizontal wrinkle. Fig. 2A shows a man, aged 51, with retraction of the lids; after operation all his symptoms disappeared except the ocular changes (fig 2B); these became more conspicuous, true exophthalmos being added to retraction of the lids, and there was ophthalmoplegia (paresis of the left external rectus and left superior rectus muscles) This syndrome has been described by Brain (1937) With exophthalmos alone there is exposure of sclera below the cornea When toxic goitre affects people over forty there is rarely exophthalmos. The eyes may be quite normal, but in most cases they present changes which, though not striking, are characteristic The conjunctiva appears thick and œdematous, and the eyes have a bright staring appearance (fig. 3), which may partly depend on slight retraction of the lids This is sometimes intermittent, a momentary lift of the lids being seen from time to time while the patient is engaged in conversation. The reverse change, ptosis of the lids, is not unknown; it is seen in wasted patients and may then be secondary to enophthalmos. But it also occurs apart from wasting (fig 4) In myasthenia gravis, in which ptosis is common, it has been reported in association with goitre by Cole and King (1932) and Allan (1934) Thickened pigmented eyelids and a sallow or muddy complexion are usual, *combined with an animated expression.* Once these common changes in the eyes and face are appreciated they are almost as helpful in diagnosis as the bulging eye. The change which the face undergoes after operation is remarkably rapid: *within forty-eight hours* a loss of pigmentation, smoothing of the skin, and alteration of the expression, which becomes more placid, may be seen Of the present series, notes on the eyes were made on 132 patients aged forty or more. In 43 of these no ocular changes were noted; in 30 the eyes were described as slightly prominent (though no attempt was made to separate real exophthalmos from illusory exophthalmos due *to retraction* of lids), in 3 there was definite exophthalmos; in 40 they were staring; in the remaining 22 there was a bright moist appearance of the conjunctiva, or thickened lids, or von Graefe's sign.

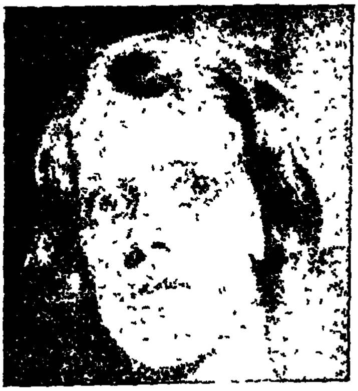

FIG 1—Girl, aged 13, with toxic goitre; exophthalmos, and retraction of upper lid, greater on the right side.

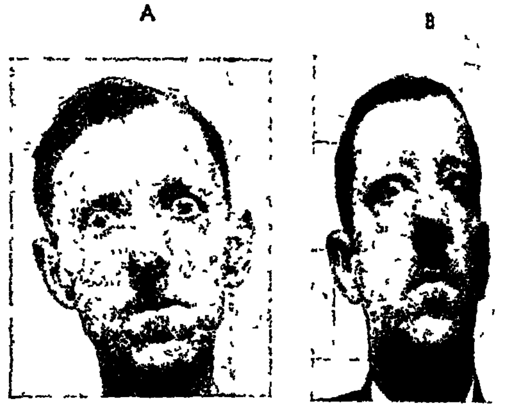

FIG. 2—Man, aged 51, with toxic goitre· (A) before operation; auricular fibrillation; retraction of lids. (B) *After operation*; exophthalmos and ophthalmoplegia have developed, though all other symptoms have disappeared.

TREMOR, LOSS OF WEIGHT, AND OTHER SYMPTOMS

Tremor of the fingers was observed in most of the older patients, but it is less constant than in the young. It is usually fine in amplitude *and best seen* in the strongly outstretched arm and hand. Sometimes, like the goitre, it is better felt than seen In 132 patients aged forty or more tremor was absent in 39 and present in 93; the tremor was fine in 83 and coarse in 10.

Weight will always be lost sooner or later in the untreated case; but, if the symptoms are mild or moderate, in early cases, or when a patient *has been* under *medical treatment*, the nutrition may be satisfactory; and even obesity is compatible with actively *toxic* goitre as judged by the cardiovascular effects Auricular fibrillation not accompanied by heart-failure, nervousness, and tremor, may be discovered to be of thyrotoxic origin in a person who is over rather than under weight Such a patient will usually have a good appetite, have no gastro-intestinal symptoms, and lead a sedentary life The absence of wasting should never prevent the diagnosis toxic goitre in this age group when other symptoms, rticularly those connected with the cardiovascular stem, point to it Whereas Swinton (1936) found it loss of weight was nearly always prominent, singer (1939) notes that auricular fibrillation bears relation to the general symptoms Of 134 cases vestigated from the nutrition point of view, 38 ported no loss of weight, 59 a slight or moderate s, 9 a considerable loss, and 28 a gain

The *basal metabolic rate* was estimated in 54 tients aged forty or more, a large majority of iom were free from the influence of iodine The ures show a wide range from −12 to + 93 per nt, with an average of +34 per cent; in only 7 as it less than +10 per cent, and 4 of these had ceived iodine for periods of two to eight days e rate thus appears to be fairly constantly elevated it not invariably so, and a rate within normal nits should not be allowed to weigh unduly against e diagnosis When the B M R is not definitely evated and the patient has had no iodine, a reduc- on of the rate after a course of iodine may be used diagnostic evidence (Means 1937) This method open to the objection that it is sometimes difficult get an initial stable value for the B M R, and that sts after the administration of iodine may be itiated by spontaneous variations in the course of e disease Moreover, patients with low metabolic tes are probably relatively unresponsive to iodine

Gastro intestinal symptoms are common The exces- ive or ravenous appetite usual in the young patient not found in the older type The appetite may o good or unaltered, but not infrequently it is npaired in association with symptoms of dyspepsia he latter may in fact be so prominent as to lead o the mistaken diagnosis of a primary abdominal sion Flatulence, retching, and epigastric fullness fter meals are the commoner abdominal symptoms Vith complete rest and administration of iodine hese symptoms usually subside rapidly without dietetic restriction or treatment with special drugs Gastric ulcer, one of which perforated, was present in 2 patients of this series. Vomiting and diarrhœa were noted only in association with thyrotoxic crisis, which is a rare event in the older patient and is an emergency of decreasing frequency in the young, probably because of earlier treatment Activation, by which is meant a restless dynamic aspect, and a flushed warm moist skin may be present, but they are not so conspicuous as in the young Psychosis was observed in 9 patients in the older group, subtotal thyroidectomy being performed in 6 In 2 of these there was complete relief of the mental symptoms, 2 others have been operated on recently, and it is too early to judge the effect, in 1 symptoms persisted and became intensified, and 1 died in postoperative crisis, and 2 of the remaining *3* did not respond to medical treatment and died Diabetes has been found in only 3 patients, severe in 1 and mild in 2

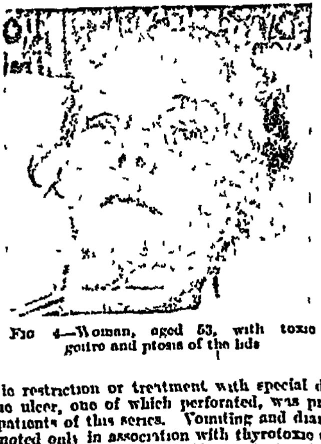

Fig 4—Woman, aged 53, with toxic goitre and ptosis of the lids

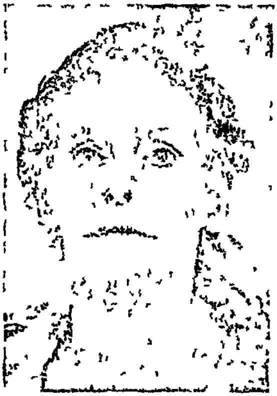

Fig 3—Woman, aged 61, with toxic goitre, paroxysmal auricular fibrillation, the eyes have a bright staring appearance, the enlargement of the thyroid is visible beneath and between the sternocleidomastoid muscles

CARDIOVASCULAR MANIFESTATIONS

The cardiovascular symptoms which predominate in importance in the older age groups are essentially three simple tachycardia, auricular fibrillation, and alterations in blood-pressure To these heart failure is sometimes a sequel

Some increase in *pulse rate* is almost invariable, though, like the other symptoms, it must be considered in relation to the conditions under which the patient is seen While a normal pulse rate in an ambulatory patient who had received no treatment would be very strong evidence against the diagnosis, a rate under 70 may be observed after a short period of rest and administration of iodine in a patient who yet may develop a postoperative thyrotoxic crisis a few days later Not only is the pulse rate increased under resting conditions but it is labile as shown by the exaggerated response to mental excitement and infections

Auricular fibrillation is one of the most characteristic features of toxic goitre and of considerable help in diagnosis It is rare before the age of thirty but becomes increasingly common up to the sixth or seventh decade, and this is true both of permanent fibrillation and of paroxysms before and immediately after thyroidectomy Table II shows the incidence of permanent and paroxysmal fibrillation in 400 cases classified in ten year periods The permanent arrhythmia was present in 65 (17 per cent), a large majority of these (48 patients or 70 per cent) being in their sixth or seventh decade Further, a higher proportion of those with *postoperative paroxysms* (68 per cent) also was found in these age-groups In 1 case auricular paroxysmal tachycardia was present before operation, and in 1 it was recorded two days after thyroidectomy Auricular flutter was never found before operation but came on in 1 case after operation as a transition between auricular fibrillation and normal rhythm. This patient received no quinidine. A proportion of those with auricular fibrillation developed signs of right heart-failure (35 per cent.). In 3 only was this present with normal rhythm In 2 of these all symptoms disappeared after thyroidectomy, and there was no reason to believe that either had primary cardiovascular disease, nor was the blood-pressure high, in the third hypertension was present.

A raised *blood-pressure* affecting both systolic and diastolic tensions has been found very frequently in the older age-groups In young subjects it is generally considered that there is some increase in the systolic pressure and little or no alteration in the diastolic, the pulse-pressure being increased This may also happen in the older group, but it has been found far less often than diastolic hypertension. Hurxthal (1936) regards diastolic hypertension in toxic goitre as a coincidence; but it does not seem possible to accept this view, and Parkinson and Hoyle (1934) also believe diastolic hypertension to be a feature of the disease. Table III shows that of 200 patients aged forty or over, 133 had a systolic blood-pressure of 160 mm. Hg or more (66 5 per cent.), and in these 133 the diastolic pressure was 90 mm. Hg or more in 103 and below 90 in 30. The pressures were generally estimated with the patients ambulatory, for the arterial tension, as in most other types of high blood-pressure, falls to a variable extent with complete rest. These figures suggest that increase in blood-pressure occurs too often to be assumed as merely coincidental. An attempt was made to provide a control series by estimating the arterial tension in 100 ambulatory patients, of whom 90 were women and 10 men, thus giving a similar sex-distribution to that of toxic goitre. Their ages ranged between forty and eighty, and all had symptoms due to lesions not connected with the cardiovascular system, and none showed any evidence of toxic goitre No case with malignant disease, active tuberculosis, or Addison's disease was included; the majority had neurosis, or dyspeptic symptoms, or rheumatoid arthritis. The figures for the blood-pressure in this group indicate that hypertension is common, 33 per cent. having a systolic pressure of 160 or more, and 32 per cent. a diastolic pressure of 90–120. High pulse-pressure with a diastolic pressure less than 90 was found in one only. The incidence of hypertension, though high, was only half that of the goitre group With the relief of tachycardia and other thyrotoxic symptoms after thyroidectomy, the high blood-pressure may show only a slight fall or none at all; but this cannot be regarded as a strong objection to the thyrogenic origin of the hypertension, for the failure to lower the pressure might be due to irreversible changes in blood-vessels and vasomotor system.

TABLE II—INCIDENCE OF AURICULAR FIBRILLATION IN 400 CASES OF TOXIC GOITRE CLASSIFIED ACCORDING TO AGE

Age	Permanent A F.	Paroxysmal A F	Postoperative paroxysmal A F
21–30	0	0	2
31–40	6	0	0
41–50	8	0	3
51–60	27	0	5
61–70	21	2	6
71–80	6	1	0
—	68	3	16

TABLE III—BLOOD-PRESSURE IN 200 PATIENTS WITH TOXIC GOITRE AGED FORTY OR MORE

	Systolic blood-pressure		Diastolic blood pressure			
Mm hg	160–200	Over 200	Below 90	90–110	110–130	[illegible]
Cases of toxic goitre	113	20	30 (15%)	77	20	[illegible]
	133 (66 5%)			51·5%		

BLOOD-PRESSURE IN 100 CONTROL CASES

	Systolic blood-pressure		Diastolic blood pressure		
Mm Hg ..	160–200	Over 200	Below 90	90–110	110–[illegible]
Control cases .	30	3	1	29	3
	33			32	

RADIOLOGICAL FINDINGS

The form and size of the heart often undergo changes (Parkinson and Cookson 1931), slight or moderate enlargement taking place in rather less than half the cases. Considerable enlargement is seen in those with very high blood-pressure and in those with auricular fibrillation. Prominence of the *pulmonary arc is found in a minority, but with greater* frequency than can be explained by the shape of the chest or on constitutional grounds, as has been suggested (Gotta 1938). Aortic changes, such as a high arch, uncoiling of the arch, and a prominent knuckle, are often present and are probably related to present or past increase in blood-pressure In addition, the form of the vascular pedicle may be modified by a retrosternal goitre and, when venous congestion is present, by engorgement of the superior vena cava

Toxic Goitre in Men

The well-known difference in the sex-incidence in young people applies equally to the older group. In the present series the ratio between women and men was 8 25 : 1 up to the age of forty, and 8·7 above this age (table I), which is almost the same No important difference was noted in the symptoms in the two sexes, but an enlarged thyroid may be more difficult to recognise in the male In women toxic goitre is present without clinical abnormality of the gland only on very rare occasions, though it may be discovered only after careful examination. Out of 358 patients there was only 1 in whom other symptoms alone compelled the diagnosis On the other hand, in men a considerable goitre may be so embedded in the more powerful muscles of the neck as *to defy detection.* Under these conditions a confident diagnosis may yet be made on such characteristic symptoms as auricular fibrillation and ocular signs for which no other cause can be found

A case of this type is illustrated by fig 2 In this man, aged 51, the neck was normal on inspection and palpation, and, as he was wasted, the structures were easily palpable; but there was retraction of the lids and auricular fibrillation, and the B.M.R. was +66 per cent. There was no evidence of rheumatic heart-disease, and the blood-pressure was roughly 160/50 mm. Hg. At operation an enlarged thyroid was found deeply buried in the tissues The portion removed, about ⅞ of the whole, weighed 3 g The complete gland therefore weighed about 0 g or four times the normal Rapid improvement followed operation, sinus rhythm being restored on the thirteenth day by small doses of quinidine

When, in the absence of detectable abnormality of the thyroid, the symptoms are insufficient for a definite diagnosis, operation is best deferred A goitre may later make its appearance and clinch the diagnosis

Diagnosis

In the older group of patients obvious changes in the eyes and in the thyroid are rarely present to proclaim the diagnosis The changes in these organs are not often such as to call attention to themselves, and they must be sought for when the symptoms indicate the possibility that the thyroid is at fault A bright staring moist appearance of the eyes and slight retraction of the lids are commonly present, but in many the eyes are unaltered Ptosis of the lids is seen occasionally but cannot be relied on as diagnostic

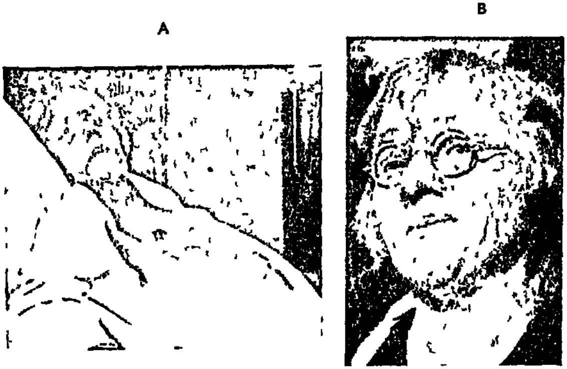

FIG 5—Woman, aged 53, with toxic goitre (A) *Before operation, anasarca,* ascites, auricular fibrillation, pulmonary infarction. (B) Four months after total thyroidectomy *Normal rhythm, 35 lb gain in weight. Working*

The thyroid, it is true, may not be palpable, but with practice in the examination of the neck this is most exceptional In these rare cases the gland has burrowed deeply into the tissues or is very small or entirely intrathoracic Apart from increase in size, an unduly firm or nodular gland is evidence that its structure is pathological This is frequently discovered on palpation in the suprasternal notch, and this and other regions of the neck must be examined with the head in various positions and while the patient swallows

Weakness and wasting are general symptoms which may have a thyroid origin and special symptoms are related chiefly to disturbances of the cardiovascular, nervous, and alimentary systems, but there is considerable variation in the way in which these are combined in different people Cardiovascular changes are probably the most constant, simple tachycardia must still be regarded as a cardinal symptom, and raised blood pressure with increase in systolic and diastolic tension must now be included among the commoner features From the diagnostic point of view, auricular fibrillation occupies a dominant position Ten years ago an ætiological classification of 361 cases of fibrillation showed that rheumatic cases came first numerically, "non rheumatic" second, and those due to goitre third (Cookson 1930) but today, with altered views on the clinical picture, many more cases would be regarded as toxic goitre, and there is little doubt that it would occupy second place It is suggested therefore that, when auricular fibrillation is found and evidence of rheumatic heart disease is lacking, goitre becomes at once the probable cause, and the probability is increased *rather than lessened if there is also high* blood-pressure

The value of the B M.R in diagnosis has certain limitations, being sometimes within normal limits when there are advanced cardiac changes, though a rate within the upper limit of normal may yet be raised for a given patient A diagnostic test with iodine is advocated for this type of case, thyrotoxic cases alone showing a depression of the B M.R after its use, but there are difficulties in the application of this test which have been mentioned above Recently attempts have been made to establish biochemical criteria of diagnosis, such as the excretion of creatine, blood-iodine and lipoid content Griffiths (1939) has found resistance to the peripheral action of insulin in goitre both with metabolic rates above and within normal limits The exact value of these promising methods will depend on the demonstration of significant differences from the normal and from those conditions which simulate toxic goitre

In the differential diagnosis the problem presented by certain psychological disturbances, such as anxiety neurosis, which is well known as a source of difficulty in young subjects, is again encountered in the older groups, though less commonly On the rare occasions when such a case presents a goitre with rapid unstable pulse and tremor, the psychological features may suggest that the goitre is not the cause of the symptoms Apart from those with psychosis most goitre patients are cheerful and coöperative and make light of their symptoms, though they may lack emotional control In those with prominent dyspeptic symptoms the presence of a goitre and of a simple tachycardia or auricular fibrillation suggests the possibility that they are of thyroid origin Essential hypertension has to be considered in the differential diagnosis for, although the pulse rate is usually not elevated (Pickering et al 1936) and auricular fibrillation is uncommon, a small proportion of patients, usually women with very high pressures have constant tachycardia nervousness and restlessness Further it has been stated by some (Laubry et al 1938, Hurxthal 1934), though denied by others (Robertson 1938 Lequime 1937) that the B M R in these patients may be elevated If there is no clinical abnormality of the thyroid a diagnosis of toxic goitre should not be made except after the most careful consideration in this type of case. When auricular fibrillation is associated with a rapid ventricular rate in mitral stenosis, murmurs may be absent, and a thyroid origin for the arrhythmia may be considered. However, in rheumatic fibrillation the ventricular rate is rapidly controlled by digitalis, and the diastolic murmur of mitral stenosis will probably then become audible. More frequently, however, it is cardiac failure with fibrillation of thyroid origin that is mistaken for heart-disease due to rheumatism or degeneration or of doubtful ætiology. The correct diagnosis is less likely to be overlooked if it is recognised and remembered that, except for rheumatic heart-disease, this clinical picture is most often the result of thyrotoxicosis.

Treatment

Until the cause of toxic goitre is known, all methods of treatment must be regarded as makeshifts. The older patient, like the young adult or adolescent, is likely to have relapses and remissions and may continue in fair health for many years with no treatment except periods of rest and perhaps administration of iodine. One should not speak of cure when symptoms are relieved in these cases, but rather of an arrested activity or a quiescent stage, as in pulmonary tuberculosis, and there is at all times the possibility of a serious exacerbation with auricular fibrillation or other symptoms, which, if untreated by radical measures, may prove fatal. At present the available evidence indicates that the quickest and surest method of relief is by the surgical removal of a large part of the gland. The presence of auricular fibrillation with or without heart-failure probably always warrants operation, though good results of X-ray treatment have been reported in cases with this arrhythmia (Newman and Garland 1938). More evidence on this method is required before it can be accepted as a serious rival to surgery in this type of case. The dramatic results which surgery can give are illustrated by the patient shown in fig. 5, who had gross heart-failure with auricular fibrillation. There was anasarca, ascites, and a very large liver, and several pulmonary infarctions occurred. After thyroidectomy normal rhythm returned, symptoms disappeared, and she was able to resume her ordinary mode of life. Age per se is no bar to operation; but, if there are degenerative vascular lesions, it may be inadvisable. A patient with a history of cerebral thrombosis, for example, would probably not be suitable. On the other hand, coincidental primary heart-disease is not a contra-indication, at least up to and including the sixth decade. Two patients in this series with goitre, auricular fibrillation, and rheumatic heart-disease regained normal rhythm after thyroidectomy.

Psychosis is a complication which may completely clear up after operation, but maniacal symptoms may not respond to medical treatment, death supervening before the patient can be brought into a fit state for operation. Careful medical treatment is an essential preliminary to operation, and in those with severe general or visceral symptoms this may need to be very prolonged. If the case is complicated by an independent condition—e.g., cholecystitis—which appears to demand a separate operation, this should be deferred if possible until after the thyroidectomy. When for special reasons it is undertaken first, the medical preparation should be as thorough and on the same lines as for thyroidectomy, including administration of iodine. There is otherwise a serious risk of a thyrotoxic crisis.

Summary

In a series of 400 cases of toxic goitre, 63 per cent were over forty years of age and the greatest incidence was in the sixth decade. In older patients the disease may not be recognised if the classical symptoms of exophthalmos and considerable enlargement of the thyroid are relied upon, though changes in both the eyes and in the gland are usual. An eye sign which has been seen in a few cases is ptosis of the lid. Cardiovascular symptoms may be prominent when the general symptoms are mild. Auricular fibrillation is so characteristic a feature of the disease that the diagnosis must be suspected on the basis of this arrhythmia alone, if rheumatic heart disease can be excluded. The value of the basal metabolic rate in diagnosis is limited, for an apparently normal rate may be high for a given patient. Differential diagnosis includes psychological disorders and essential hypertension. The quickest and surest method of relief is by surgical removal of a large part of the thyroid.

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DEFICIENCY OF VITAMIN B_1

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NOT all pellagra-like deficiency diseases are curable by nicotinic acid. Elvehjem et al. (1937) reported the cure of black-tongue in dogs by the administration of nicotinamide and this was very soon followed by reports from others on the value of nicotinic acid in human pellagra. Spies, Cooper, and Blanken (1938) administered in 1937 nicotinic acid in doses up to 0 5 gramme daily to four patients with pellagrous lesions of the mucosa and rapidly cured them. Fo Helmer, Lepkovsky, and Jukes (1937) almost at the same time reported the cure of four cases of alcoholic pellagra with nicotinic acid. Many other workers soon published reports of cases successfully treated with nicotinic acid (a résumé was given in a leading article in THE LANCET last December) and Al and colleagues (1938) and others have reported on the value of nicotinamide. Manson-Bahr and Rans (1938) described a case of pellagrous stomatitis and diarrhœa which was cured by a full diet and nicotinic acid 0·15 g daily; the diarrhœa ceased immediately and the stomatitis cleared rapidly. In this case I think the full diet and the cessation of the pellagrous diarrhœa may perhaps have been the cause of the disappearance of the stomatitis, though of course the nicotinic acid may have cured it. The article mentions that the stomatitis in sprue cases at the Hospital for Tropical Diseases in London has not been cured by nicotinic acid.

In 1935 Pallister and I published a paper on a deficiency disease occurring commonly in prisons and other institutions in Malaya, characterised in its early stages by eczema of the scrotum and/or angular stomatitis and soreness of the tongue, and readily curable in this early stage by yeast or Marmite, fresh or autoclaved, which would always bring about marked improvement within two weeks (Landor and Pallister 1935). This disease thus fell into the group of pellagrous conditions which may legitimately be ascribed to deficiency of some portion of the vitamin B_2 complex. After this Aykroyd and Krishnan (1936) described cases of angular stomatitis in India which were curable by the administration of autoclaved yeast; they referred to the similarity to the disease described by us in Malaya but did not observe any eczema of the scrotum in their cases. Moore (1937), to whose earlier work on this subject of deficiency of vitamin B_2 Pallister and I referred in our original paper, has made further investigations, and the syndrome he describes is remarkably like ours. Wright (1936), as mentioned by us in our original paper, has also described a similar disease; in 1927 he referred to it as the A and B avitaminosis of Sierra Leone; now he further postulates a lack of sulphur in the diet as a contributory cause. In our cases in Malaya, however, apparent cure is obtainable, at any rate in the earlier stages, with autoclaved marmite alone without any special source of vitamin A being added to the diet at all. I have recently tried the effect of administering sulphur in the *form of sodium thiosulphate (mentioned* by Wright) by mouth and intravenously and have found no benefit in my cases. Another physician in this country informs me that he has cured similar cases by administration of sodium thiosulphate, but he was working with hospital patients on good hospital diets, and, though there may be some significance in the observation, the evidence of sulphur being of value per se seems unconvincing to me. Wright also mentions benefit from oral administration of ichthyol and from injections of Contramine, but this is complex therapy the interpretation of which is open to argument.

The process of subdivision of the B_2 complex into its constituents is proceeding apace; lactoflavin has been considered by Lepkovsky and Jukes (1936) and others to be the food factor missing in the production of a dermatitis in rats and turkeys, but has not yet been proved of value in human disease; nicotinic acid, as already mentioned, has been proved of definite value in pellagra in human beings; B_3 to B_6 are still not clearly defined. The disease described by Pallister and myself has become much rarer in the Singapore gaol owing probably to dietary improvements; this is perhaps unfortunate from the experimental point of view though of benefit to the prisoners; however, the disease is still to be found there by searching.

INVESTIGATIONS WITH NICOTINIC ACID

In August, 1938, ten prisoners with eczema of the scrotum, two of them also having angular stomatitis, were given ten 0·05 g tablets daily of nicotinic acid—i.e., 0·5 g daily as recommended by Spies et al.—for fourteen days. At the end of this period four were worse and the mouths of three of these, previously unaffected, became sore, one being ulcerated; four showed no change; one showed slight improvement of the *scrotum* but developed a sore mouth, which he had *not* had previously; and one showed slight *improvement of* mouth and scrotum. Most of them *had "toxic" effects, such as giddiness, flushing, sore dry throat, and itching and tingling of the skin.*

The nicotinic acid was then stopped, and they were all then given marmite ¼ *oz daily; improvement* occurred immediately *in all cases* and was well marked within three days; *at the end of two weeks on marmite* treatment both scrotal and mouth lesions had disappeared in most cases and were much better in all. One of the original mouth lesions and one of the later mouth lesions took a further week to disappear completely, and in a few cases the scrotum did not *entirely lose* its scaliness and irritability till after four weeks *of marmite treatment*; in fact, the scrotal skin does not regain an absolutely normal texture for a still longer period, but the improvement with marmite is always so obvious that it forms a suitable control for any other treatment under trial; this was in accord with our previous experience of the disease. No other alteration was made in the prisoners' diet.

The scrotal lesions were examined for fungus in *all cases*; in only one case was mycelium *found*; in three others a few spores were found, such as may be seen in most skin scales from any cause; the other six were entirely negative.

In November, 1938, after having read the article by Manson-Bahr and Ransford (1938), I tried two prisoners with angular stomatitis, one of them having eczema of the scrotum, on the smaller dose of nicotinic acid used by them—i.e., 0·15 g *daily*. *After* two weeks on this treatment there was *no improvement* in the stomatitis or scrotal eczema.

DISCUSSION

Stannus (1936), commenting on the article by Pallister *and* myself previously mentioned, makes the following criticism: "The pellagrologist would have no hesitation, I think, in pronouncing this condition described by Landor and Pallister *to be* pellagrous. In this series of cases the high incidence of the *pellagrous* scrotal skin affection was quite possibly determined by the tinea infection. One wonders if in these cases some other manifestations of pellagra would not have been detected by the trained eye; the hesitation to make the diagnosis of pellagra has been due apparently to the absence of the classical exanthem."

In 1937 I assured Dr. Stannus personally that we had *looked very closely for other* lesions of pellagra and had *not found them*. We did not say the lesions were *not* pellagrous; we said the disease was not classical pellagra, and I quote the main differences hereunder:—

PELLAGROUS SIGNS PRESENT	SIGNS OF CLASSICAL PELLAGRA NOT PRESENT
Early	
Stomatitis	Dermatitis of hands
Eczema of scrotum	Dermatitis of feet
Later	
Dimness of vision	Diarrhœa
Paræsthesiæ	Mental disturbance
Difficulty in walking, with spasticity	Macrocytic anæmia
Exaggeration of tendon-reflexes	

I grant that all the symptoms and signs described in the Malayan prison disease have been included in various descriptions of pellagra, but merely to label all such manifestations as pellagra is not necessarily helpful. It may be that the term "pellagra" has been used to cover a group of deficiency diseases. It is *certain* that nicotinic acid will cure some cases *described* as pellagra; it is equally certain, I submit, that nicotinic acid will not cure the deficiency disease described by Pallister and myself. I believe also that nicotinic acid will be found not to cure "pellagrous" anæmia, for I have found it of little value for nutritional macrocytic anæmia in Malaya; nor is marmite very helpful in this respect.

I am hoping gradually to test the various factors of the vitamin-B_2 complex that are being isolated, but so far I am not in a position to state which is the precise missing factor in the production of the syndrome that Pallister and I have described.

EFFECT OF NICOTINIC ACID ON "CLASSICAL" PELLAGRA IN MALAYA

The following recent case of pellagra treated by nicotinic acid forms a remarkable contrast to the cases I have described above :—

A Chinese woman, aged 55, was admitted under my care at the General Hospital, Singapore, on April 11, 1938, complaining of epigastric discomfort, vomiting, and soreness of the mouth for the previous three months. The tongue was raw; there was ulceration at the corners of the mouth, on the lower lip, and on the floor of the mouth; the gums were spongy, and pyorrhœa was present. There was no anæmia.

She was treated first with mild antiseptics locally and milk of magnesia internally. By April 19 the mouth had got worse and membranous sloughs were seen; the condition was then thought to be pellagrous, and foods rich in vitamins were added to her diet, such as cod-liver oil, tomato juice, orange juice, marmite, and liver soup; vitamin C and Hepatex were also given by injection during the last week in April.

On April 23 the skin on the dorsum of the hands and feet was noticed to have become swollen and reddish-purple, especially in the region of the joints. The mouth then began to improve, but the hands and feet got worse. The blood Wassermann reaction was negative.

On the 28th she started to have diarrhœa and had blistering and ulceration of the skin of the hands and feet; the mouth, however, was now very much improved. On May 1 she was put on to sodium thiosulphate gr. 15 thrice daily. By the 4th the skin of the hands and feet was much worse, appearing dusky and gangrenous in places, with defective sensation, suggesting the possibility of acute neural leprotic lesions, and an injection of 1 c.cm. of chaulmoogra oil was given. No lepra bacilli were found

On the 14th pigmented areas were noticed on the nose and cheeks, and cracks at the corners of the mouth were still visible; the skin of the hands was perhaps slightly improved, but that of the feet was worse; the general condition was poor, and she could not walk. On the 16th she was put on to *nicotinic acid* 0 5 g. daily, divided into five doses, and improvement was immediate and dramatic. The blisters on the hands and feet dried up, the dead skin peeled off leaving normal healthy epidermis beneath, the diarrhœa ceased, the mouth became normal, and she could walk normally. She was discharged in good health on June 7.

CONCLUSION

Cases of eczema of the scrotum and stomatitis at the Singapore gaol are not curable by nicotinic acid but are curable by yeast or marmite, as described in an earlier paper. They appear to be caused by a deficiency of a portion of the vitamin-B_2 complex which is not nicotinic acid. Certain signs of classical pellagra, however, appear to be curable in Malaya as elsewhere by nicotinic acid.

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LYMPHOCYTIC CHORIOMENINGITIS

ISOLATION OF THE VIRUS FROM THE NASOPHARYNX

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Since its first discovery by Armstrong and Lillie in America in 1934, the virus of lymphocytic choriomeningitis has been isolated from human beings on a number of occasions Most of the patients whose spinal fluid or blood yielded virus, and many of those whose blood contained neutralising antibodies to the virus, showed the typical picture of so-called acute benign lymphocytic meningitis. However, several cases, notably the ones originally described in England by Findlay et al. (1936), showed symptoms of cord involvement with motor and sensory changes in the lower extremities and disturbance of bladder function. Nevertheless the virus incriminated seemed to be immunologically the same as or closely related to that of Armstrong and Lillie (1934) and Rivers and Scott (1935).

In the course of examination of material from patients with acute symptoms suggesting involvement of the nervous system, the virus of lymphocytic choriomeningitis has been isolated from four patients *in the past year* The most interesting case, to be described, was originally diagnosed on clinical grounds as acute anterior poliomyelitis, but the virus of lymphocytic choriomeningitis was isolated from cerebrospinal fluid once and nasopharyngeal washings twice. A report on the other three cases will be published later.

CLINICAL RECORD

The patient, a girl of 17, had been a professional dancer for the past two years. While on tour and feeling quite well she suddenly developed early one evening a feeling of pins and needles, without numbness, from her toes to her waist, with aching in the calves, thighs and small of the back. Although she managed to play her part in the show, the muscular pains afterwards became so severe that she got no sleep that night, and kept having to get up and walk about to try and ease them Whenever she exerted herself, however, a diffuse headache developed

The next morning, although the pain and headache were worse, she managed to travel about 50 miles by train to London. Her legs felt as if they would give at the knees but she was able to walk. She was, however, feverish and faint and her back very stiff

On arriving in London she went to a doctor who found her temperature was 101° F and sent her to bed That night her right leg was so weak that it hardly supported her, and next morning it was completely paralysed Her left leg also was a little weak but no more than she had experienced before in a febrile illness By the third night, however, the left leg was still weaker and next morning it was quite powerless save at the toes which she could just move She could not sit up The doctor saw her that afternoon, diagnosed acute anterior poliomyelitis and sent her to Cuddington Isolation Hospital that same day, Oct 18, 1938

On admission she complained of headache and had complete paralysis of both lower extremities with difficulty in micturition There were no reflexes in the legs and complete absence of muscular power, though sensation appeared to be normal On the 9th she still complained of severe frontal headache and, on slight passive movement of the left leg, of severe pain in the back and of stiffness in the leg muscles Lumbar puncture was performed and the cerebrospinal fluid (C S F) was found to contain 101 cells per c mm , all lymphocytes, a moderate amount of globulin, 0 04 per cent protein , a specimen was sent to this laboratory On Oct 20 the pains in the head were less severe and movement of the left leg was slightly improved Another lumbar puncture was carried out and 15 c cm of fluid was withdrawn On Oct 21 the patient appeared brighter, slept fairly well, passed urine satisfactorily, and apart from her legs felt considerably better

On Nov 12, 1938, the condition of her legs having improved slightly, she was transferred to the National Hospital for Nervous Diseases, Queen Square On admission she could move only one toe in the right foot but in the left leg she could tighten up all the muscles and move all the joints through a small range

Six weeks after the onset of her illness she was found to have normal power in her neck and no rigidity The upper extremities were normal In the legs there was great flaccidity The ankles were extended but could be passively flexed beyond a right angle Fibrillation was absent Both peroneal compartments were wasted, making the fronts of both tibiæ sharp and prominent Both thighs were wasted and felt soft and flabby There was a gross degree of flaccid paralysis in both legs The patient could not sit up without using her arms The reflexes at both knees and right ankle were absent, but present at the left ankle , there was no clonus The plantar response was flexor on the left side and absent on the right There were no abnormal sensory findings

A lumbar puncture was done on Dec 12 and C S F, sent to this laboratory, but unfortunately no cell-count was carried out on this material Blood and nasopharyngeal washings in saline were also taken at this time Nasopharyngeal washings were again obtained on Jan 6, 1939

The patient made little progress and went home about Feb 1, with paralysis of the lower extremities After a short time her family became dissatisfied with orthodox medical treatment and transferred her to the care of an osteopath Hence no further material was available for experimental investigation

EXPERIMENTAL OBSERVATIONS

The C S F taken on Oct 21 was inoculated into mice and guineapigs.

Mice —0·03 c cm was injected intracerebrally into 12 mice , none of them became ill and all succumbed four weeks later after intracerebral inoculation with Rivers's W E strain of lymphocytic choriomeningitis virus

Two *guineapigs* were each inoculated intracerebrally with 0 25 c cm and intraperitoneally with 0 5 c cm and placed in the same cage

Guineapig I —Temperature rose to 104 3° F on the sixth day after inoculation Blood was taken by cardiac puncture and inoculated intracerebrally in 6 mice None of these mice became sick but 3 survived intracerebral inoculation of the W E strain of the lymphocytic choriomeningitis virus three weeks later The temperature remained elevated with a peak of 104 8° F on the twelfth day The guineapig was killed on the thirteenth day when its temperature was 104 5° F and the animal was becoming thin and weak All the organs were normal in appearance. The brain was removed and found to be sterile when cultured in the ordinary bacteriological media A 10 per cent suspension of brain in normal saline was inoculated intracerebrally into 6 mice On the eighth day 1 mouse was dead and 5 were sick with the typical symptoms of experimental lymphocytic choriomeningitis

Guineapig II —The temperature rose on the seventeenth day to 103 6° F , and reached a peak on the twenty third day of 106° F The animal was bled out and killed with ether The lungs showed slight congestion and the rest of the organs appeared normal Blood was inoculated intracerebrally in 6 mice, all of whom were dead or sick on the sixth and seventh days with typical signs of lymphocytic choriomeningitis The brain, which was sterile after 48 hours' cultivation on various media, was also found to contain the virus on inoculation into mice

Clotted blood from the patient received on Oct 24 was inoculated intracerebrally and intraperitoneally in mice None of these became sick and all succumbed to reinoculation with the W E strain of lymphocytic choriomeningitis virus three weeks later On Dec 12 C S F , blood and nasopharyngeal washings in saline were obtained The C S F was inoculated as before into guineapigs and mice with entirely negative results

The virus of poliomyelitis has been isolated on several occasions (cf Kramer et al 1939) from nasopharyngeal washings by inoculation into monkeys, but never from the C S F of human cases of acute anterior poliomyelitis As the symptoms of this case were highly suggestive of acute anterior poliomyelitis, it was thought that possibly the original isolation of the virus of lymphocytic choriomeningitis might have been due to an experimental error The nasopharyngeal washings were, therefore, inoculated into a rhesus monkey

To 20 c cm. of nasopharyngeal washings in saline in a stoppered flask was added 15 per cent ether and the mixture was allowed to stand at 0° C for an hour with frequent shakings The ether was evaporated off at room temperature and the remaining fluid was used for inoculation 1 c cm was injected intracerebrally and 5 c cm intraperitoneally The monkey's temperature rose to 104 2° F on the seventh day Blood was removed by cardiac puncture, inoculated intracerebrally into mice and found to produce lymphocytic choriomeningitis. The monkey's temperature was still 104 2° F on the tenth day and the blood still contained lymphocytic choriomeningitis virus as shown by intracerebral injection of mice On the eleventh day the temperature began to fall, and on the sixteenth day, as the monkey was weak with lack of power in the hind limbs, it was killed with ether At no time were there symptoms of muscular paralysis such as are seen in a monkey infected with poliomyelitis virus After being bled out, the spleen, liver, kidney, brain and cervical cord were removed with aseptic precautions The blood and organs were cultured in the ordinary media, found to be sterile and were then inoculated intracerebrally into mice The virus of lymphocytic choriomeningitis was present in all the tissues

The pathological picture in the brain and cord of the monkey was that characteristic of lymphocytic choriomeningitis and no evidence was found of changes in the cells of the anterior horn

On Jan. 6, 1939, nasopharyngeal washings were again obtained from the patient, treated as before with ether and inoculated into 2 guineapigs, 12 mice and a rhesus monkey.

Guineapig A was inoculated with 0·2 c.cm. of a 2 per cent. suspension in saline of starch intracerebrally and 1 c.cm. of nasal washings subcutaneously. Its temperature first became elevated on the sixteenth day to 104·4° F. On the seventeenth day blood was removed by cardiac puncture, inoculated intracerebrally into mice and found to produce lymphocytic choriomeningitis. On the nineteenth day the temperature was 105·4° F. and blood again contained virus as shown by intracerebral inoculation into mice; on the twentieth day the temperature was 106·2° F., and on the twenty-first day 105·6° F. The animal was then weak and thin and was killed with ether. The brain was removed, cultured and inoculated into 6 mice with positive results for the virus of lymphocytic choriomeningitis.

Guineapig B received only 1 c.cm. washings subcutaneously. Its temperature first rose on the twenty-second day to 104° F. Its blood was positive for the virus; the temperature reached a peak on the twenty-sixth day of 106·4° F. and the animal was dead on the thirtieth day. The brain contained the virus also.

The mice and monkey inoculated with the nasal washings remained in good health but virucidal antibodies were later found in the monkey's serum.

The strains of virus isolated on all three occasions from the patient appeared to be identical, each one failing to produce disease when inoculated intracerebrally into mice already immune to the W.E. strain. Similarly, mice recovered and immunised against the new strain D.W. resisted intracerebral inoculation with the W.E. virus.

Specimens of serum collected from the patient on the ninth, twenty-fourth and fifty-eighth days of illness all failed to show any neutralising antibody against either the W.E. or D.W. strains. Serum from a rabbit hyperimmunised with the W.E. strain protected against equally concentrated suspensions of both strains.

DISCUSSION

The isolation of the virus of lymphocytic choriomeningitis on three separate occasions from the same patient, and the failure to incriminate the virus of poliomyelitis, indicate that the virus of lymphocytic choriomeningitis was responsible for the clinical picture. The possibility of a double infection must be considered, but as the nasopharyngeal washings failed to yield evidence of poliomyelitis virus there is no experimental proof of it being present

We have no reason to believe, from various other experiments being carried on at the same time, that either the mice or the guineapigs were suffering from a latent infection with the virus of lymphocytic choriomeningitis. Both the mice and the guineapigs employed were bred in the country and had not been in contact with animals infected with the virus before being experimentally infected with material from the patient whose case we record. Traub (1936b) found that of 13 normal guineapigs placed in cages with diseased ones, only 1 contracted the disease. There is, however, a remote possibility that the monkey may have had a latent infection with this virus when injected, as among a number of monkeys employed in experimental works, 2 have been known to exhibit spontaneous infection with lymphocytic choriomeningitis.

The failure to demonstrate neutralising antibodies in the serum eight weeks after the commencement of the illness might be taken as evidence against the specificity of the infection, but the slow development of antibodies in patients infected with this virus has been stressed by Scott and Rivers (1936), and recently Howard (1939) has reported a case in which antibodies did not appear in the serum for 45 weeks.

The present is, as far as we know, the first time this virus has been isolated from the nasopharynx. It is the third case in this country in which the virus has been isolated from patients with symptoms more severe than those of acute benign lymphocytic meningitis.

The source of the infection in human cases—whether from mice, other animals or humans—has not been proven except in the two cases recently described by Armstrong (1939), when the virus was isolated from 3 of 5 grey mice caught in the homes of the infected humans; likewise the mode of infection has not yet been shown in humans. Numerous cases have been reported of so-called benign lymphocytic meningitis occurring at the same time, or following one another in several members of a household, and neutralising antibodies have been demonstrated in blood of contacts with cases from which virus had been isolated (Findlay et al. 1936).

Armstrong and Wooley (1937) found neutralising antibodies in 30 of 106 cases of recent infection of the upper respiratory tract. Recently, Lépine and Sautter (1938) described a case of accidental infection in a laboratory-worker. The virus apparently entered by injury to the cornea and produced a generalised infection, virus being isolated from the blood and urine.

Traub (1936a) showed that although the nasal secretions and urine of infected guineapigs carry the virus, the pooled nasopharyngeal washings of 3 guineapigs that had shown severe symptoms after subcutaneous inoculation with the virus of lymphocytic choriomeningitis 35–44 days previously were avirulent. In contrast to this, he found (1936b) that immune mice carry the virus in the nasal passages as long as two months after the original infection. When normal mice were placed in contact with these carriers immunity without apparent illness was produced in the former, and in one experiment virus was repeatedly detected in nasal washings from exposed mice but never in the blood In one mouse virus was present in the nasal washings on at least two successive days, but the animal did not become either generally infected or immune Traub obtained negative results in two experiments in which an attempt was made to infect mice by placing them in cages heavily contaminated with virulent mouse urine

The findings obtained in the present case, and those derived from animal experiments, suggest that the virus of lymphocytic choriomeningitis is probably present at some period in the nasopharynx of individuals suffering from this infection. It may possibly be present in the same situation in healthy carriers and in persons suffering from febrile symptoms without definite involvement of the nervous system. Lépine, Mollaret and Kreis (1937), for instance, found that less than half the individuals infected experimentally with lymphocytic choriomeningitis showed nervous symptoms although all suffered from fever.

The finding of this virus in cases with neurological symptoms in various forms points to the need for renewed study and interest in the cause of acute infections of the central nervous system of unexplained ætiology.

The observations here recorded emphasise the importance of searching for the virus of lymphocytic choriomeningitis, not only in cases clinically resembling acute aseptic lymphocytic meningitis but also in other acute nervous and febrile complaints of unknown origin.

SUMMARY

The virus of lymphocytic choriomeningitis has been solated from the cerebrospinal fluid and naso-pharyngeal washings of a patient with clinical signs and symptoms of acute anterior poliomyelitis with paralysis still present 15 weeks after onset

The virus was still present in the nasopharynx 8 and 12 weeks after the onset though not demonstrable in the cerebrospinal fluid at the eighth week

The findings emphasise the need for more intensive investigation of material from neurological cases

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STERNAL PUNCTURE

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A STUDY of the bone marrow is now essential in ll obscure disorders of the blood, for from it we may arn what are the pathological changes in the arrow, whereas blood-counts merely reflect, and ften distort, these changes Sternal puncture, which s as simple, painless, and free from danger as vene-uncture, is the ideal clinical procedure for this study nd in most diseases gives enough information In ome diseases, notably aplastic anæmia and myelo-clerosis, it is necessary to know also the histological tructure of the marrow, hence sternal biopsy must be performed with the trephine, which method will be fully dealt with elsewhere (Hynes and Scarff 1939) Sternal puncture, however, gives a clear cut and distinctive picture in leukæmia, including aleukæmic leukæmia, and in pernicious anæmia, hæmolytic anæmias, and secondary anæmias, and it is probable that with further study its range of usefulness will be extended A failure to obtain marrow must not be taken as diagnostic, it may strongly suggest such a diagnosis as aplastic anæmia, but this should always be confirmed by sternal biopsy with the trephine

Human marrow biopsy was first performed by Ghedini (1908) who aspirated marrow from the tibia, but, although his method was subsequently used occasionally on the Continent, the full clinical value of the procedure was appreciated only quite recently The classical studies of Peabody (1927) on pernicious anæmia introduced marrow biopsy to America

The tibia is not a very suitable bone for marrow biopsies because in adults it contains little red marrow, and in blood disorders it is one of the last bones to show changes The marrow of the tibia may remain yellow when that of all other bones shows considerable hyperplasia, even in such extreme conditions as leukæmia (Strumia 1929) Seyfarth (1923) pointed out the advantages of using the sternum, which always contains much red marrow and shows morbid changes at an early stage of the disease

Sternal puncture was introduced by Arinkin (1927) and was rapidly recognised as a method of great clinical and pathological value The most complete studies of the subject in the English language are those of Young and Osgood (1935) and Vogel, Erf, and Rosenthal (1937), both these papers contain full bibliographies

Sternal biopsy with the trephine allows study of histological sections of the marrow as well as of smears and is therefore superior to sternal puncture, but the simplicity of sternal puncture makes it preferable, provided that the material obtained gives a trustworthy picture of the marrow In my experience sternal-puncture smears are almost identical with those made directly from the trephined marrow of the same case, this agrees with the findings of Vogel and his associates (1937) The distribution of cells in the smears also corresponds closely to that seen in the sections Repeated sternal punctures on the same case are consistent Segerdahl (1935) found that a second puncture in all of thirty cases gave a differential count closely similar to the first Nordensen (1935) found the marrow differential count to be the same in puncture material from the sternum, vertebræ, ribs, ilium, and tibia, and Vogel et al (1937) confirmed this in one case The sternal marrow may therefore be taken as representative of the marrow throughout the body, except in such patchy and progressive lesions as myelosclerosis

Sternal puncture thus gives a true indication of the quality of the marrow, but it gives only a rather uncertain indication of its quantity If aplasia is in question, only histological sections of the marrow can give a definite answer

Technique

I have used Messrs Allen and Hanburys's modification of the Salah (1934) needle, which is solidly built, so that there is no danger of breakage (fig 1) The needle is sterilised in hot oil As judged from a personal experience, the technique described produces only the mildest discomfort but a preliminary dose of aspirin gr 10 and Nepenthe minims 15 half an hour before the operation, soothes a nervous patient The puncture site is chosen opposite the third rib An intradermal bleb of a 2 per cent solution of procaine is made at this level over the middle of the sternum and the subcutaneous tissues and periosteum beneath are infiltrated with about 1 c cm of procaine. A very fine intradermal needle minimises the discomfort, and it should have a short bevel to facilitate infiltration of the periosteum

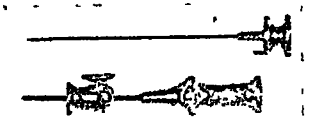

FIG 1—Sternal puncture needle and stylet

The puncture needle is next pushed through the skin down to the bone and the adjustable stop fixed ½ in above the skin The needle is driven through the outer table of the sternum by a few sharp taps with a small hammer; a distinctive "give" is felt as the needle enters the medullary cavity. The stylet is removed from the needle and a dry 1 c cm. syringe attached; marrow fluid is now easily withdrawn by gentle suction, which produces a characteristic discomfort that may amount to actual pain if a large amount of fluid is rapidly withdrawn. I withdraw 0·25 c cm of fluid and place this in a tube containing Wintrobe's dry oxalate mixture. (For 0 25 c cm. of fluid, place 0 1 c cm. of a solution of 0 2 per cent. potassium oxalate and 0·3 per cent ammonium oxalate in the tube and dry in the incubator.) The marrow fluid clots much more quickly than ordinary blood; so thorough mixing with the oxalate should not be delayed.

Smears are made from the oxalated fluid as for ordinary blood smears; there is no distortion of the cells if the smears are made within half an hour A total nucleated-cell count—i.e, leucocytes and nucleated red cells—is done on the fluid which may also be used for supravital studies and other hæmatological techniques The smears are stained by Leishman's method in the ordinary way and a differential count made of four or five hundred cells; several smears should be used to allow for uneven distribution of the various cell types There should be no failure to obtain marrow after a little experience If the marrow fluid does not flow freely, the needle either has not reached or else has gone past the medullary cavity; the characteristic suction pain is a sign that the needle is correctly placed

There were neither complications nor unpleasant sequelæ in this series of 109 cases, nor have any been reported

Terminology

The terminology of the cells is based on that of Whitby and Britton (1937), and the terms used are briefly defined as follows:—

Segmented polymorphs—The nucleus shows one or more definite chromatin threads.

Non-segmented polymorphs.—These cells are usually "band forms," but in most the chromatin structure of the nucleus is characteristic of "juvenile" cells (Schilling 1929) Some authors have wrongly called all of these "stab" cells

Metamyelocytes.—The cytoplasm is similar to that of the polymorph; the nucleus is indented.

Myelocytes—The cytoplasm is similar to that of the polymorph but has a blue tinge because the granules are fewer. The nucleus is round or oval.

Premyelocytes—The cytoplasm is blue and contains coarse red granules; there is no differentiation into neutrophils, eosinophils, and basophils. The nucleus has a well-marked fine reticulum, and nucleoli may be present. The earliest forms are distinguishable from the myeloblast only by the presence of a few granules; later forms are twice as large as the myeloblast and contain many red granules.

Myeloblasts—There is very little dark blue cytoplasm. The nucleus has a sharp-cut fine reticulum, and nucleoli are prominent There are no granules.

Lymphocyte series.—Normal lymphocytes need no description The earliest lymphoblast is virtually indistinguishable from the myeloblast in Leishman-stained films In lymphatic leukæmia a great variety of intermediate forms, all abnormal, are seen, but they are too numerous to be given separate names. Most of these have been classified simply as lymphocytes, the term lymphoblast being reserved for those cells which show a large definitely reticular nucleus and but little cytoplasm.

Plasma cells.—A few typical plasma cells are usually seen in marrow smears.

Monocyte series.—Typical monocytes are usually seen in marrow smears. The primitive monocyte is found only in monocytic leukæmia; it is a large cell (10 × 20 μ) with a lobed reticular nucleus, often showing nucleoli. The cytoplasm contains [illegible] coarse red granules. The earliest forms appear to merge with the myeloblast

Normoblasts.—Most of these cells are the same size as erythrocytes, but larger forms up to 10–12 μ in diameter occur. The cytoplasm is fully hæmoglobinised; the nucleus is about 4 μ in diameter and is either pyknotic or has a "cart-wheel" structure

Erythroblasts.—The cytoplasm is polychromatic. The later forms show the same variation in size as normoblasts and have a "cart-wheel" nucleus, whereas earlier forms are larger (10 μ) and have a coarsely reticular nucleus

Megaloblasts—The cytoplasm is a very deep blue colour. The nucleus has a very heavy reticulum with conspicuous nucleoli.

Megakaryocytes.—A few megakaryocytes can usually be found, especially if the edge of the smear is searched with the low power The cytoplasm is lilac coloured and resembles platelets; there are about five large oval overlapping nuclei (10–20 μ) More commonly one sees a single large oval nucleus with fragments of platelet-like cytoplasm. It has not been thought necessary to include these rather indefinite remains in the differential count.

Hæmatogones.—One can easily distinguish the structures classified by some authors as hæmatogones. They show the nucleus of a small lymphocyte with no visible cytoplasm, but intermediate forms occur between these disembodied nuclei and apparently typical small lymphocytes.

Total cell count—The number of leucocytes and nucleated red cells counted together in the marrow fluid is a rough indication of the cellularity of the marrow. The count depends also, however, on the amount of blood mixed with the fluid—the first drop of fluid has a very high marrow content, whereas if several c.cm. are withdrawn, the later portions may contain hardly any marrow. It is therefore important to withdraw a small and constant volume of fluid

A total cell count below 20,000 per c.mm. strongly suggests a hypoplastic marrow, and one which is above 100,000 favours hyperplasia, but discrepancies occur. Thus, in a case of acute leukæmia in this series the sternal marrow on histological section was typical of acute leukæmia, and in the sternal-puncture smear myeloblasts formed 60 per cent. of the differential count, though there were none in the peripheral blood. The total cell count of the sternal-puncture fluid was, however, only 3000 per c mm, and the puncture was repeated with the same result It appears, as most authors have suggested, that very primitive cells may adhere so closely one to another and to the bony trabeculæ that they are not withdrawn with the fluid

TABLE I—SUGGESTED NORMAL RANGES IN THE MARROW DIFFERENTIAL COUNT

Cells	Neutrophil	Eosinophil	Basophil
Segmented polymorphs	9–30	0–3	0–0 5
Non-segmented polymorphs	20–40	0–2	0–1
Metamyelocytes	2 5–12	0–2 5	—
Myelocytes	2– 8	0–1	—
Premyelocytes	0 5– 5	Total cell count 25,000–100,000 per c.mm. Myeloid-erythroblastic ratio · 2 1–5 1	
Myeloblasts	0–2 5		
Lymphocytes	5–20		
Plasma cells	0– 1		
Monocytes	0– 5		
Normoblasts	7–19		
Erythroblasts	2– 7		
Megaloblasts	0– 4		

Myeloid-erythroblastic ratio—It is convenient to express as a ratio the total percentage of cells of the

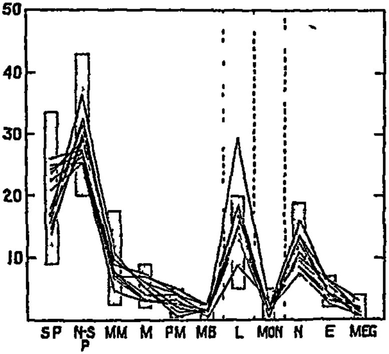

FIG 2—Chart showing the relation of thirteen normal cases to the suggested normal range of marrow findings (table I) Total cell count 24 000–90,000 Myeloid erythroblastic ratio 2 8–7 0 1 The points on the charts (figs 2–7) show the percentages of the various types of marrow cells in the differential count The points representing the figures in a given case are joined together to form a graph of the marrow differential count of that case Neutrophil, eosinophil, and basophil forms are grouped together E, erythroblasts, L, lymphocytes, LB, lymphoblasts M, myelocytes, MB myeloblasts, MEG, megaloblasts, MM, metamyelocytes, MON, monocytes, N, normoblasts, N S P non segmented polymorphs, PM, promyelocytes, SP, segmented polymorphs

myeloid series as compared with that of cells of the primitive red cell series This myeloid-erythroblastic ratio indicates whether the precursors of the granulocytes or red cells are most affected by a pathological process, and in what relative degrees

Normal Marrow

An exact comparison of the normal standards given in the literature is made difficult by differences in terminology and in methods of recording It is both logical and useful to include leucocytes and nucleated red cells in the same differential count, the two together totalling 100 per cent Smear cells should not be counted, they are largely fortuitous and merely distort the picture if they are included in the differential count Reich (1935) and Vogel et al (1937) have centrifuged marrow fluid and carried out differential counts on smears from the buffy layer, this procedure is not only unnecessary but also disturbs the cell ratio

The technique described here is founded on that of Young and Osgood (1935), and the normal marrow findings in this series agree closely with those of Young and Osgood if smear cells are excluded from their data Table I shows a suggested normal range compiled from the 28 normal cases of Young and Osgood (1935) and the 13 normal young men in the present series, the relation of these 13 cases to the suggested normal range is shown diagrammatically in fig 2

The largest single series of normals is that of Segerdahl (1935) who performed sternal puncture on 52 young men 40 young women 9 old men and 9 old women There was no great difference between any of these groups Unfortunately Segerdahl's classification of the cells differs considerably from that used here, particularly as regards myelocytes and metamyelocytes and it is therefore not possible to make use of his very complete statistical analysis There does not appear, however, to be any gross discrepancy between his figures and the normal range suggested in this paper

In the present small series the total cell count ranged between 24,000 and 90,000 per c mm, with a mean of 47,500 Segerdahl's (1935) range was much larger —from 10,600–238,200 per c.mm, with a mean of 75,000—and Zanaty's (1937a) range was very similar Segerdahl found no significant difference in the marrow cell count according to age or sex By histological studies, however, Custer and Ahlfeldt (1932) found the proportion of red marrow in the sternum to decline fairly evenly from 100 per cent at one year to 44 per cent at seventy years of age In this series the myeloid erythroblastic ratio lay between 2 7 and 6 9 1, with a mean of 4 25 1 Young and Osgood's (1935) range was 2 0 to 8 3 1

The marrow-picture is characteristically distorted if much blood is included in the fluid withdrawn The total cell count is low, and the percentage of segmented polymorphs and lymphocytes is unduly high, the percentages of the other cells being proportionately decreased Such a finding should suggest the need to repeat the puncture

Abnormal Marrow

The chief part of this study has been on the marrow in leukæmia and obscure anæmias, table II analyses the cases studied

LEUKÆMIA

In leukæmia sternal puncture is diagnostic The marrow is extremely cellular, with the normal cell ratio greatly altered by an increase in primitive white cells The proportion of primitive red cells is depressed, but the percentage of erythroblasts is almost equal to that of normoblasts This "maturation defect" is probably associated with the macrocytic anæmia which is almost always seen in leukæmia, it differs from the maturation defect of pernicious anæmia in that there is no premature hæmoglobinisation of the erythroblasts

TABLE II—ANALYSIS OF 109 CASES ON WHICH STERNAL PUNCTURE WAS PERFORMED

Normal		13
Leukæmia	Acute myeloid	10
	Chronic myeloid	11
	Acute lymphatic	5
	Chronic lymphatic	16
	Monocytic	2
Polycythæmia (untreated)		2
Pernicious anæmia (untreated)		7
Achrestic anæmia		1
Hepatic cirrhosis with macrocytic anæmia		1
Macrocytic syphilitic anæmia		1
Acholuric jaundice (untreated)		3
Aplastic anæmia		6
Myelosclerosis		6
Secondary anæmias		4
Unexplained anæmias		3
Unexplained splenomegaly		4
Unexplained splenomegaly with eosinophilia		2
Agranulocytosis		2
Lymphosarcoma		7
Hodgkin's disease		2
Medullary carcinomatosis		1

Sternal puncture is particularly valuable in diagnosing the leucopenic ("aleukæmic") forms of leukæmia Here the marrow does not differ from that of leukæmia with leucocytosis A quarter of the cases of leukæmia in this series were leucopenic throughout their course—4 acute myeloid 2 acute lymphatic, 4 chronic lymphatic and 1 acute mono

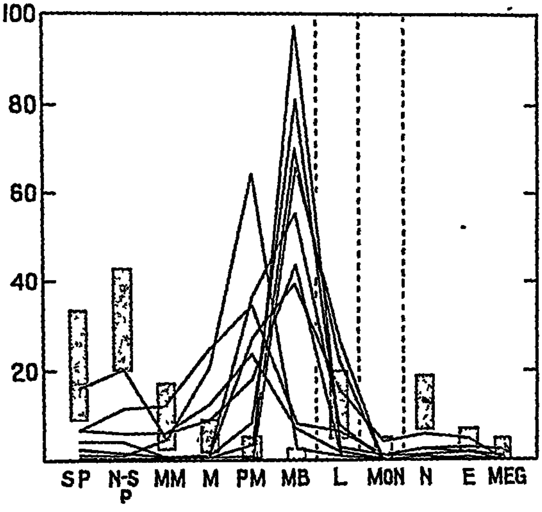

FIG. 3—Chart of marrow findings in ten cases of acute myeloid leukæmia. Total cell count 3000–310,000. Myeloid-erythroblastic ratio 6·3–1000 : 1.

cytic. All of these gave essentially the same total and differential marrow cell counts as the corresponding leucocythæmic cases.

Acute myeloid leukæmia.—Fig. 3 shows diagrammatically the findings in 10 cases. There is a great increase in the proportion of the more primitive white cells, which may form up to 99 per cent. of the total. The increase is usually in myeloblasts and premyelocytes together, but either of these may predominate. The percentage of myelocytes is often raised, but all more mature forms are depressed, often to an extreme degree. Few nucleated red cells are present, but erythroblasts are almost as numerous as normoblasts. Some cases have shown a high percentage of cells indistinguishable in stained smears from the normal small lymphocyte; these may be the micromyeloblasts of Naegeli.

Chronic myeloid leukæmia.—In early cases the percentages of myeloblasts, premyelocytes, and myelocytes are about doubled, the percentage of the other myeloid cells being about normal. Lymphocytes and monocytes are scanty or absent, and the proportion of nucleated red cells is low and shows the characteristic "maturation defect" already described (see fig. 4) In the terminal phases the picture approximates to that of acute myeloid leukæmia. The differential counts of three terminal cases are represented by the dotted lines in fig. 4.

Acute lymphatic leukæmia—From 70 to 99 per cent. of the cells are primitive lymphocytes; cells of the myeloid and erythroblastic series show the same "maturation defect" as in chronic lymphatic leukæmia.

Chronic lymphatic leukæmia.—Lymphocytes comprised 40–90 per cent. of the cells in the marrow. Sometimes they were normal small lymphocytes, but more usually they showed abnormalities in size and nuclear structure Very few were primitive enough to be called lymphoblasts. Cells of both the myeloid and erythroblastic series showed a "maturation defect," the percentage of the more mature forms being depressed, while that of the more primitive types was about normal (see fig. 6).

Monocytic leukæmia—Two cases of monocytic leukæmia have been available for study. In one, of the acute leucopenic type, primitive monocytes formed 93 5 per cent. of the marrow cells; the remaining cells were mostly nucleated red cells. The other case was chronic and showed 30 per cent. of primitive monocytes and 4·5 per cent. of normal monocytes in the marrow; polymorphs were normal, but myelocytes were very low, and the nucleated red cells were at the lower limit of normality.

Effect of treatment on the marrow picture in leukæmia. Young and Osgood (1935) carried out sternal punctures on two cases of chronic myeloid leukæmia before and after irradiation of the spleen and found that both the blood- and marrow-pictures returned to normal together. Vogel et al (1937) stated that the marrow-picture in chronic myeloid leukæmia was not affected by this treatment, but it appears from their description of the cases that the blood-count was not nearly restored to normal by their treatment Weil and Perlès (1938) found the marrow-picture to be normal in remissions and suggested that this might form a basis for the evaluation of treatment.

The marrow-pictures of eight cases of chronic myeloid leukæmia after treatment are shown in fig. 5 Treatment consisted of irradiation of the spleen with deep X rays until the leucocyte count was reduced to 10,000 per c mm. or less. The marrow-pictures were much nearer normal than in the untreated cases (included in fig. 4), the improvement in the nucleated red cells being especially noticeable Statistically these changes could not be ascribed to dilution of a constant marrow with normal and leukæmic blood respectively. That irradiation of the spleen should have so profound an effect on the bone-marrow is obviously a fact which merits further investigation. Similar observations on four cases of chronic lymphatic leukæmia treated with deep X rays by various methods gave inconclusive results.

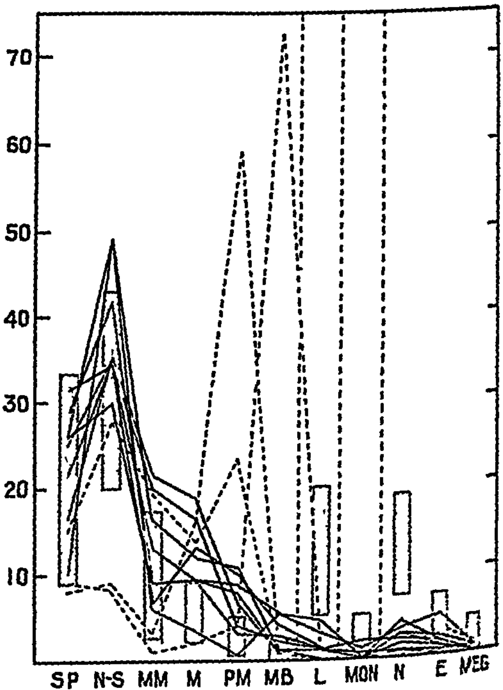

FIG 4—Chart of marrow findings in untreated chro myeloid leukæmia. Total cell count 130,000–750,0 Myeloid-erythroblastic ratio 10 5–1000 · 1. Dotted li represent differential counts of three terminal cases.

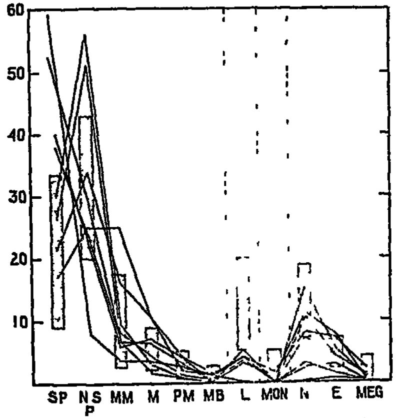

FIG 5—Chart of marrow findings in eight cases of chronic myeloid leukæmia after treatment Total cell count 18,000–270,000 Myeloid-erythroblastic ratio 3·9–108 : 1

POLYCYTHÆMIA

Dameshek (1935) found considerable hyperplasia of both the erythroblastic and myeloid elements of the marrow in his four cases, as did also Weil and Perlès (1938) Vogel et al (1937) found that the only change in the marrow differential count in polycythæmia was a preponderance of segmented polymorphs. This was the finding in one of the cases in this series, but in the other case there was a great increase in erythroblasts—20 per cent of late and 4 per cent of early forms In this case polymorphs were present in normal numbers, but all other myeloid cells were very scanty

PERNICIOUS ANÆMIA

The characteristic feature of the bone marrow in untreated pernicious anæmia is the preponderance of megaloblasts and erythroblasts, which together make up 25–45 per cent of the cells present (fig 7) Of the erythroblasts, a half to two thirds are early forms with a reticular nucleus, while the remainder have a large "cart wheel" nucleus and are considerably larger than is normal at this stage Premature hæmoglobinisation is prominent, and this in an early erythroblast constitutes Ehrlich's "megaloblast" The abundant cytoplasm is polychromatic, and the large nucleus (8–10 μ) has a heavily marked coarse reticulum. The proportion of normoblasts was normal in six of these cases but in the other one there were 42 per cent The percentage of polymorphs is greatly decreased, but the earlier myeloid cells are present in normal proportions.

The marrow is restored to normal by treatment Segerdahl (1935) observed a megaloblastic marrow become erythroblastic twenty four hours after beginning liver therapy Young and Osgood (1935) on the other hand found in one case the number of megaloblasts unchanged at the peak of the reticulocyte crisis, though there was a great increase in normoblasts, in another case they observed a great diminution in the megaloblasts ten days after the reticulocyte peak Weil and Perlès (1938) observed that the marrow first became normoblastic, then showed myeloid hyperplasia, and finally became normal.

ACHRESTIC ANÆMIA

One case with the features of achrestic anæmia (Israëls and Wilkinson 1936) has been studied The marrow showed the same increase in early hæmoglobinised erythroblasts as in pernicious anæmia, but the normoblasts were also increased, and the megaloblasts were normal Zanaty (1937b) did not find hæmoglobinised erythroblasts in his cases of achrestic anæmia, his "macronormoblasts" took their place

OTHER MACROCYTIC ANÆMIAS

A marrow similar to that in pernicious anæmia is found in sprue (Vogel et al 1937) and in the similar anæmia due to carcinoma of the stomach and extensive resection of the intestine (Weil and Perlès 1938) One case of syphilis and one of cirrhosis of the liver, both with the blood picture of pernicious anæmia, are included in this series, the marrow was normal in both cases

ACHOLURIC JAUNDICE

Vogel et al. (1937) found that the marrow in chronic acholuric jaundice was almost normal, whereas in more acute types there was an increase in normoblasts Weil and Perlès (1938) found a great increase in normoblasts and erythroblasts, even up to 75 per cent of the total Of the cases in the present series, in two the only abnormality was an increase in late erythroblasts, in the other, three quarters of the cells in the smear were nucleated red cells; normoblasts, erythroblasts, and megaloblasts being increased in about equal proportions

APLASTIC ANÆMIA

Aplastic anæmia cannot be adequately studied by sternal puncture, only histological section will show the essential architectural and quantitative changes in the marrow The subject is dealt with in detail elsewhere (Hynes and Scarff 1939) and need only be briefly summarised here

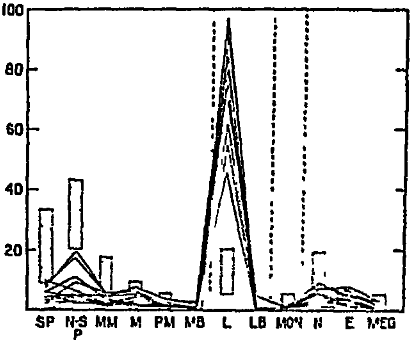

FIG 6—Chart of marrow findings in chronic lymphatic leukæmia. Total cell count 76,000–1,000,000

Aplastic anæmia is the name given to a syndrome characterised by a typical blood picture but showing great diversity in causation and marrow pathology The simplest case is the form due to a chemical poison such as benzol, in which the failure of blood regeneration is obviously due to the extreme hypoplasia of the marrow What marrow tissue remains shows a deficiency of mature cells, especially of the myeloid series, and a great relative increase in cells which have been variously regarded as small lymphocytes or "primitive cells" closely resembling small lymphocytes. Although the hypoplasia usually involves all the bones, the sternal and vertebral marrow may occasionally retain regenerative power and be almost or even quite normal. Sternal biopsy may thus confuse the diagnosis instead of elucidating it.

Occasionally, however, though these injurious agents produce the typical clinical syndrome and blood-picture, the marrow is hyperplastic and packed with primitive cells The anæmia is due not to destruction of the marrow but to inability of the primitive cells to mature. In benzol poisoning several cases of this type have been described (for bibliography see Thompson et al 1934), and Martland (1931) has described a similar result from radium poisoning. In idiopathic aplastic anæmia the marrow ranges from aplastic to hyperplastic in a similar manner (Thompson et al 1934, Rhoads and Miller 1938)

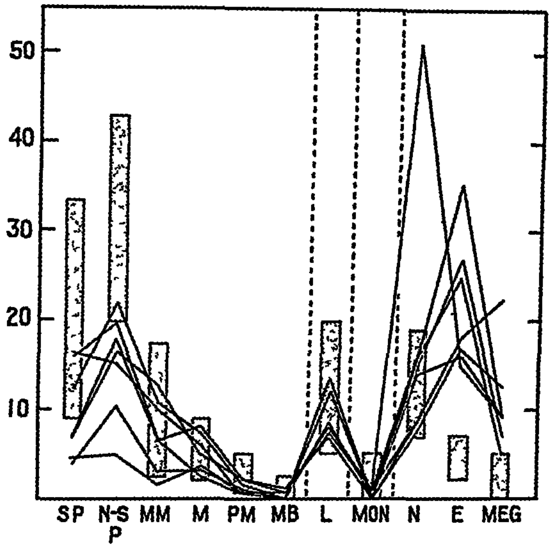

FIG. 7—Chart of marrow findings in untreated pernicious anæmia. Total cell count 40,000–110,000. Myeloid-erythroblastic ratio 0 25–1·2 1.

The present series includes six cases of idiopathic aplastic anæmia, of which the sternal-puncture findings (confirmed by biopsies and histological sections) were as follows:

(1) Extreme hypoplasia, involving especially the myelocytes and later myeloid cells, with a relative increase in small lymphocytes (1 case).

(2) Marked hypoplasia, with a reduction in myelocytes and later myeloid cells; diminished or normal nucleated red cells; and a moderate relative lymphocytosis (3 cases)

(3) Moderate hypoplasia, confined to myelocytes and later myeloid cells, with a relative increase in early and late erythroblasts (1 case).

(4) An active marrow with a normal differential count (1 case).

These cases will be described fully elsewhere in association with Dr. L. E. H. Whitby.

MYELOSCLEROSIS

In myelosclerosis a chronic fibrosis of the bone-marrow is associated with splenomegaly and a leuco-erythroblastic anæmia Sternal puncture does not help the diagnosis, whereas sternal biopsy with the trephine may be diagnostic (Hynes and Scarf 1939) If the sternum is extensively involved in the process, practically no marrow may be obtained by sternal puncture, whereas, if the marrow is still in the phase of compensatory hyperplasia, the picture resembles that of chronic myeloid leukæmia, except that nucleated red cells are more numerous.

SECONDARY ANÆMIAS

In anæmias secondary to hæmorrhage, infection, or toxæmia there is a normoblastic reaction in the marrow (Young and Osgood 1935). Late erythroblasts were also increased in two of the cases in the present series.

AGRANULOCYTOSIS

The marrow in agranulocytosis was studied by Jackson and Parker (1935) with autopsy material. In the early stages the degree of cellularity is normal, but practically all the myeloid cells are myeloblasts. If death takes place from sepsis with partial remission of the blood-picture, the marrow is hyperplastic and crowded with young polymorphs When the disease has existed for 8–10 days, the myeloblasts disappear, and lymphocytes and plasma cells are the only white cells in the marrow. The three cases of Vogel et al. (1937) appear to have been in this last stage.

Alternatively the two types of marrow have been regarded not as successive stages but as evidence of two types of agranulocytosis: one due to aplasia of the marrow, and the other to a maturation defect, (Fitz-hugh and Krumbhaar 1932) Thus Custer (1935) in his cases of agranulocytosis found that the marrow showed a considerable proliferation of myeloblasts, with few myelocytes and practically no polymorphs. The nucleated red cells were normal or slightly increased, and there was infiltration with lymphocytes and plasma cells.

The present series contains only two cases of agranulocytosis. The first, seen by courtesy of Dr. Bruce Williamson and Dr H. G. Close, of the Royal Northern Hospital, was of the cyclical type In the agranulocytic stage, when there were no granulocytes in the blood, the only myeloid cells in the marrow were myeloblasts (1 per cent.), eosinophil polymorphs (1·5 per cent), and basophil polymorphs (1 per cent.). The monocytes and nucleated red cells were normal, and the remaining cells were lymphocytes with 2 per cent. of plasma cells. In the remission stage the marrow-picture was normal. The other case, a chronic one of some months' duration, had a normal marrow except for a gross deficiency (3 3 per cent) of segmented neutrophil polymorphs.

LYMPHOSARCOMA

In six cases of lymphosarcoma in this series the marrow was normal. One other case was atypical in that there was associated a chronic macrocytic anæmia. Sternal puncture produced marrow containing 51 per cent. of small lymphocytes and 10 per cent. of lymphoblasts, with only 14 per cent of mature polymorphs. The differential count was otherwise normal. At autopsy the bone-marrow and other organs were extensively infiltrated with lymphosarcomatous nodules.

MISCELLANEOUS CONDITIONS

The marrow was found to be normal in two cases of *Hodgkin's disease* Weil and Perlès (1938) found a generalised hyperplasia in 10 of 25 cases, but there was no specific change.

In one case of *medullary carcinomatosis with leuco erythroblastic anæmia* the marrow contained 22 per cent of normoblasts, 16 per cent of late erythroblasts, and 5 5 per cent of early erythroblasts, and showed a deficiency of segmented polymorphs (8 per cent) No cancer cells were found, although other authors have occasionally found them, similarly an excess of plasma cells may be found in *multiple myelomatosis* (Vogel et al. 1937)

In the two cases of *splenomegaly with eosinophilia* the marrow was normal except for an increase in eosinophil polymorphs Even this abnormality is not always seen in cases of eosinophilia (Vogel et al 1937, Weil and Perlès 1938)

Sternal puncture may be diagnostic in *Gaucher's disease* (Sokolowski 1932), the typical cells being found in the smears It may also help in *malaria*, the parasites are much more numerous in the marrow red cells than in the peripheral blood, as was first observed by Ghedini (1908) In *kala azar* the parasites may be found in monocytes in the sternal marrow (Weil and Perlès 1938)

Discussion

The value of sternal puncture in research into hæmatological pathology is evident In clinical pathology its greatest use is in the diagnosis of leukæmia with leucopenia The marrow picture in leukæmia, whatever the peripheral blood picture, is so characteristic that a diagnosis may be made with complete confidence In other cases, even if the exclusion of leukæmia is the only use of sternal puncture, the procedure is justified by the fatal prognosis of that disease

In the other important group of obscure anæmias, comprising the various forms of aplastic anæmia and myelosclerosis, a diagnosis cannot be made by sternal puncture Sternal biopsy with the trephine gives much more information in these conditions, for the histology of the bone marrow can thus be studied, but even this method may fail through the patchy distribution of the lesions both in the sternum and between this and other bones When the diagnosis has been made, repeated sternal punctures may allow the progress of the disease to be followed

Summary

(1) The history and technique of sternal puncture are described.

(2) An account is given of the marrow findings in 100 cases, including 13 normal, 44 of leukæmia, 7 of untreated pernicious anæmia, 6 of aplastic anæmia, and 6 of myelosclerosis

(3) The marrow picture in the various forms of leukæmia is described The picture in the so called aleukæmic leukæmias does not differ from that of the corresponding leucocythæmic leukæmias

(4) Irradiation of the spleen in chronic myeloid leukæmia improves the marrow picture pari passu with the blood picture

(5) There is a characteristic marrow picture in the various types of anæmia but neither aplastic anæmia nor myelosclerosis can safely be diagnosed by sternal puncture For these a trephine specimen is required

My thanks are due to Prof J McIntosh and Dr L. E H Whitby for much helpful advice during the course of this work, to Dr C I Lakin for his constant assistance on the clinical aspects of the cases, and to the Lady Tata Memorial Committee for financial aid

The protocols of this work are given in an unpublished appendix, the manuscript of which has been deposited in the general library of the British Museum (Natural History), London, S W 7

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CHRONIC THYROTOXIC MYOPATHY CURED BY THYROIDECTOMY

BY T B PARSONS, M D Camb, M R C.P
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R J TWORT, M A Camb, M B Aberd
LATE HOUSE PHYSICIAN AT THE HOSPITAL

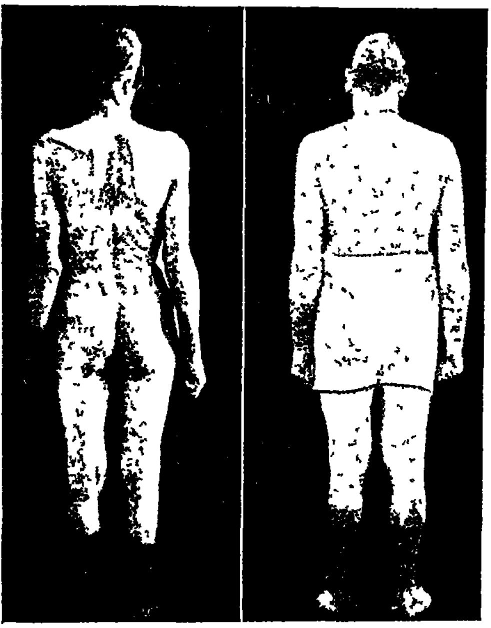
THE association of Graves's disease with a condition resembling progressive muscular atrophy has long been recognised, and the syndrome has been termed by Brain chronic thyrotoxic myopathy (Brain and Turnbull 1938) Examples of successful treatment of this condition by subtotal thyroidectomy have been reported by Ayer et al (1934) and Starling et al (1938) The following case, in which the presenting symptom was muscular weakness, is a further illustration of the beneficial results of operation

CASE REPORT

A man aged 50, was admitted to Addenbrooke's Hospital on May 30, 1938, complaining of dysphagia and of increasing weakness, especially affecting the arms and legs

History —He had worked as a brick-drawer for the past twenty five years and, until recently, had been considered one of the strongest men in his district His usual weight was 12½ st There were no previous illnesses of note, but for two years he had suffered from epigastric pain, relieved by food and unaccompanied by vomiting He was at work until November, 1937, when he first noticed difficulty in swallowing This came on in attacks when he could swallow neither solids nor liquids and food "went the wrong way." There was no pain in the throat and no sense of obstruction In December, 1937, he noticed generalised muscular weakness affecting especially the limbs

He felt well while lying in bed or sitting, but on getting up he had great difficulty in walking, and he was unable to use his arms for any length of time because of weakness He complained of feeling hot and of sweating excessively especially at night His condition progressively deteriorated until [illegible] before admission, and he had found it very [illegible] to climb stairs and impossible to get out of doors. His weight had fallen to 10 st. 9 lb. The appetite had always been good, and he would not admit that it had been larger recently. He had noticed palpitations, but not breathlessness, precordial pain, or swelling of the ankles. Recently he had become nervous and restless and found he "could not keep still." His speech had become jerky and his voice high-pitched. He had noticed no swelling of the neck and no prominence of the eyes; nor had these been observed by any relations or friends. He denied domestic or financial worries of any kind. There was no family history of goitre or muscular disease.



Chronic thyrotoxic myopathy: (A) before operation, showing symmetrical muscular atrophy; (B) six months after partial thyroidectomy, showing recovery from wasting.

Examination showed an obvious recent loss of flesh. His restlessness in bed was striking, as also was the continuous purposeless jerky movement of the limbs. Speech was staccato, rapid, and slightly dysarthric; the skin was moist and warm No exophthalmos could be observed, but the eyes were slightly staring. Very slight lid-lag and lid-retraction were present, and wrinkling of the forehead was poor; convergence and blinking were normal. The thyroid gland in the neck was not visible and scarcely palpable. There were no nodules or dilated veins. No tremor or wasting of the tongue could be detected. Examination of the throat and larynx (Mr. Alfred Walford) suggested nothing to account for the dysphagia, apart from muscular weakness. The pulse-rate was 90, regular, but with a collapsing quality; blood-pressure 145/100. The apex-beat was located in the fifth left intercostal space, forcible, and 3¼ in. from the middle line; sounds pure. No abnormality was found in the cranial nerves. Both upper extremities showed, however, extreme symmetrical muscular wasting (see figure), involving especially the muscles of the shoulder-girdle and upper arm and small muscles of the hands. There was fine tremor of the outstretched hands Power was greatly reduced in all movements The deep reflexes were elicited and equal, but the abdominal reflexes were absent. The lower extremities showed similar symmetrical wasting and loss of power in the muscles of the pelvic girdle, thighs, and calves The deep reflexes were normal and the plantar responses flexor. Occasional fibrillary tremors were observed in the calves at rest, and fascicular muscular twitchings were prominent on active movement. No sensory abnormality was demonstrable in the trunk or limbs.

Special investigations.—Electrocardiography showed tachycardia, sinus rhythm, and left ventricular preponderance. His blood Wassermann reaction was negative. His cerebrospinal fluid was clear, with pressure normal, globulin negative, and W.R. negative. Radiography showed swallowing, stomach, and duodenum normal. His basal metabolic rate (B.M.R.) was plus 54 per cent., and one week later plus 53 per cent.

All muscles responded to faradism and to galvanism; cathodal contraction was greater than anodal; in the legs an abnormal amount of current was needed to cause contraction.

A *diagnosis* of chronic thyrotoxic myopathy was made, and after a period of preoperative treatment by high caloric diet (increasing to 5000 calories a day) and iodine therapy Mr. Vernon Pennell performed partial thyroidectomy on July 20 under Avertin, local, and gas-and-oxygen anæsthesia Histological examination of the gland revealed a very active hyperplasia of epithelium with some filling of the acini by intra-acinar papillary growths. The epithelium was cubical and showed the changes characteristic of thyrotoxicosis (Dr. C. H. Whittle)

Convalescence was prolonged owing to postoperative pneumonia and, later, abscess at the base of the left lung. Treatment of the abscess by postural drainage was very successful. By Sept. 16 the temperature had settled, sputum was reduced to a small quantity daily, and radiography revealed the abscess cavity to be healing. The patient began to increase in weight, and the general condition rapidly improved. B.M.R. on Aug. 10 was found to be minus 1 per cent. On discharge on Oct. 17 the temperature had settled completely and he had no sputum. The pulse-rate was 70 and the weight 11 st. 4 lb. The muscles had regained their usual size, and power was almost normal. For some weeks he had been up and about and able to perform light manual tasks.

He reported for *re-examination* at outpatients on Nov. 26 and was found to weigh 12 st. 4 lb. He was in excellent health and spirits and said that he had been for a three-mile walk on the previous day His restlessness had entirely disappeared, and muscular development and power were normal. On Jan. 14, 1939, his weight had increased to 13 st. 1 lb and he slept well and did not perspire; he felt energetic and equal to a full day's work (see figure)

COMMENTS

In a commentary to the paper by Starling et al. (1938) and again in an exhaustive review of exophthalmic ophthalmoplegia Brain (1938) differentiates the myopathies which on histological, biochemical, and clinical grounds are to be regarded as rare but direct manifestations of thyrotoxicosis into (1) acute thyrotoxic myopathy, (2) chronic thyrotoxic myopathy, and (3) thyrotoxic periodic paralysis The case reported above is an example of chronic thyrotoxic myopathy, a condition in which the muscular disability simulates that observed in progressive muscular atrophy: the wasting is due to poisoning of the muscles by thyrotoxicosis and does not depend on degenerative changes in the nervous system Some of the more important indications of thyrotoxicosis—namely, enlargement of the thyroid gland and gross tachycardia—were absent, and exophthalmos was represented only by a slight enlargement of the palpebral fissure Restlessness, sweating, and a fine tremor of the outstretched hands, and an increase in the B M.R. were, however, present The muscular weakness and wasting, which, although generalised, affected mainly the shoulder-girdle, the upper arms, and the small muscles of the hands, superficially resembled that observed in progressive muscular atrophy, but the muscles of the forearms were relatively normal, and there was no evidence of motor neurone degeneration The initial symptom of intermittent dysphagia was unaccompanied by any change in the tongue or by weakness of the orbicularis oris muscle Fibrillary twitchings, however, were observed in the muscles of the calves and thighs, but not with the frequency associated with progressive muscular atrophy

The result of partial thyroidectomy was soon apparent within three months the wasted muscles had regained their normal size and contour, and within six months he felt equal to resuming his usual occupation.

SUMMARY

The patient, a man aged 50, whose usual weight was 12½ st, was admitted to hospital with dysphagia, increasing muscular weakness (especially of the limbs), and loss of 2 st in weight Chronic thyrotoxic myopathy was diagnosed and partial thyroidectomy performed Histological examination of the portion removed showed very active epithelial hyperplasia, with some filling of the acini by papillary growths After a prolonged convalescence, complicated by postoperative pneumonia and lung abscess, the patient regained his strength and weight

We wish to thank Dr Laurence Martin for his helpful advice in the management of this case, and various members of the staff of Addenbrooke's Hospital for the investigations performed

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CLINICAL AND LABORATORY NOTES

INTERMITTENT VENOUS OCCLUSION

A MODIFIED APPARATUS

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Encouraged by the good results of Collens and Wilensky (1937) in the treatment of peripheral vascular disease by intermittent venous occlusion, we constructed in June, 1938, an apparatus for carrying out this treatment which has proved highly satisfactory When our attention was called to the paper of Wilson and Ogston (1938) we found that the apparatus they described was generally similar to our own For the working principles of the apparatus their paper should be consulted, only the technical differences being given here

A garden hose nozzle is attached to a round water tap and is fitted with an all metal cock which regulates the flow (fig 1) The cock allows the tap to be kept fully turned *on*, so that there is no chance of the water gradually stopping, as is likely to happen when a tap is running slowly A constant-level gauge can be dispensed with

The water runs directly into the lower bottle (fig 2), and there is therefore no possibility of water and air meeting in the connecting tube This tube can if necessary be hung over a bracket which projects from the wooden stand Over this bracket all the tubes are led, so that the upper bottle can be put at various levels for regulating the pressure without making the tubes kink, this being further avoided by keeping the tubes near to each other The upper bottle is an ordinary irrigator fixed to the wooden stand Both limbs of the siphon run over the bracket together with the connecting tube, so that the water rises simultaneously in the connecting tube and the proximal limb of the siphon. The siphon is attached to the sides of the upper bottle By tilting the siphon more or less (fig 3) one can regulate the difference in level between the top of the siphon bend and the bottom of the irrigator, and so vary the time during which the maximum pressure is maintained

The outflow of the siphon is directed as nearly as possible vertically The air from the lower bottle is led to the cuff Leading the air-conducting tube upwards

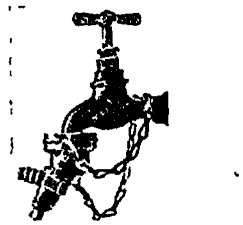

Fig 1—Tap with garden hose nozzle and metal cock for regulating the flow

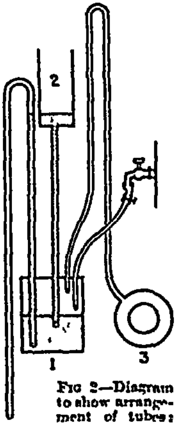

Fig 2—Diagram to show arrangement of tubes: 1 = bottle 2 = irrigator 3 = cuff.

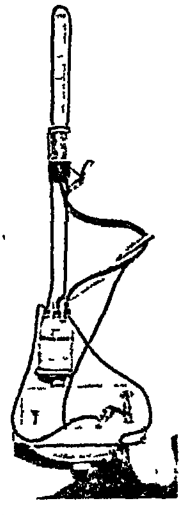

Fig 3—Apparatus working with a pressure of 80 cm. water The siphon is tilted so that the maximum pressure is maintained for only a very short time

to a point above the top of the siphon makes it impossible for water to enter the cuff even if it should develop a leak. No water-trap is therefore required. For the sake of cheapness a football bladder bandaged to the limb can be used instead of the proper cuff if desired.

We have had good results with this apparatus in 1 case of arteriosclerosis and intermittent claudication; 2 cases of thrombo-angiitis obliterans; 5 patients with varicose ulcers (1 with diabetes); and in 2 out of 4 patients with arteriosclerosis and diabetic gangrene In varicose ulcers and badly healing amputation stumps a considerable increase in exudation was seen during the intermittent occlusion. This was found to be a favourable sign.

I should like to thank Prof. L. Polak Daniels, director of the medical department, for his cooperation.

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M. & B. 693 IN MALARIA

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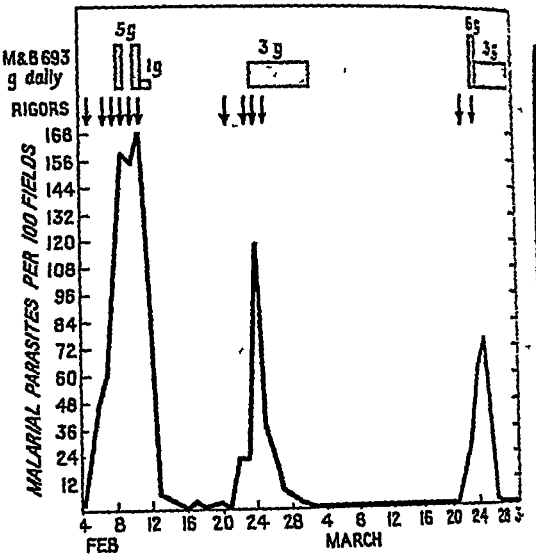
LABORATORY TECHNICIAN AT THE HOSPITAL

UP to the present no report has been published in this country * on the effect of M. & B 693 on the malarial parasite. The accompanying chart, showing the effect of treatment on the rigors and parasite counts of a general paralytic inoculated with benign tertian malaria on Jan 20, 1939, should therefore be of interest to anyone contemplating a more extensive investigation of this subject It is somewhat similar to that given in our account of the action of sulphonamides in malaria (*Lancet*, 1938, 2, 79)



A further relapse took place on April 23, for which quinine was given

The general paralytic undergoing treatment is often infected with coccal organisms besides spirochætes and malarial parasites The psychiatrist may then be faced with the problem of destroying the cocci without checking the malaria prematurely. The chart suggests that M & B 693 should be given sparingly if it is desired to complete an uninterrupted course of malarial treatment.

We wish to thank Dr. J. D. Silverston, medical superintendent of the hospital, for permission to publish this case: and Messrs. May and Baker Ltd. for supplying the drug.

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* Since submitting this article for publication we have had an opportunity of seeing a report in which the action of M & B. 693 in ape malaria is recorded (Chopra, R N, and D B. M, *Indian med Gaz* April, 1939, p. 201).

MEDICAL SOCIETIES

ROYAL SOCIETY

AT a meeting of this society on June 8 Prof. Freiherr von VERSCHUER (Frankfurt a M.) spoke on

Twin Research

Francis Galton, he said, was the founder of human hereditary biology, and in 1875 he read a paper calling attention to the importance of twins for distinguishing between the effects of Nature and Nurture, or heredity and environment From the existence of two kinds of twin—one kind no more alike than ordinary sibs, the other kind maintaining a noteworthy likeness despite differences in the mode of life—Galton deduced the paramount importance of innate structure in controlling the destiny of the individual. Except by Thorndyke in America, his ideas were not followed up till after the war, and the first serious contributions to twin pathology came from Siemens in 1924. Today there were hundreds and even thousands of papers on the subject from every scientific country in the world.

Scientists early learnt to distinguish between twins born in one set of membranes and twins born in two, and thought that this was a method for distinguishing between one-egg (EZ) and two-egg (ZZ) pairs This was now known to be a fallacious method, and the two kinds of twins were now distinguished by comparing a large number of characteristics which were known to agree in EZ and to differ frequently in ZZ pairs. The characteristics chosen were not necessarily the same for all races. For instance, eye colour and hair colour were useful in England and Germany because they agreed in EZ, while there was a large range of variation in ordinary sibs and ZZ In races with universal dark pigmentation, such characteristics would obviously be useless. A large number of characteristics were necessary, because supposing we only took three—eye colour, hair colour and blood group—we should find that not only the EZ agreed, but also some of the ZZ pairs. Similarly, skin folds, papillary patterns, &c, lost much of their value for diagnostic purposes because of the frequency with which ZZ are as alike as EZ.

Referring to the reliability of the modern method based on the comparison of independently variable characteristics, Prof Verschuer said that it had been proved by blood-group investigations Many hundreds of EZ diagnosed in his clinic had been submitted to serological investigation in an independent laboratory and there was never a single case of difference. Furthermore the group of ZZ showed the same percentage of agreement and disagreement as ordinary sibs; whereas if mistakes had been made and EZ pairs had been included in the group of ZZ, the percentage of agreement would have been too high.

After establishing the validity of their methods of diagnosis, the next step had been to test the textbook statements about the fœtal membranes. More tha ten years ago, placentas were carefully collected, injected and examined microscopically and the results were compared with those later obtained by resemblance diagnosis. Of 32 cases with a single chorion and circulatory anastomoses, all were EZ. Of 100 cases with two chorions, 76 were ZZ and 24 were EZ. If injection showed an anastomosis between the circulations and microscopical examination proved that the chorion was single, the twins must be EZ. On the other hand, the presence of two chorions proved nothing, since 24 out of 56 EZ had two chorions.

Theoretically it was possible to imagine monovular twins differing in their hereditary structure owing to some unevenness in the distribution of nuclear material. Practically, this did not occur. In plants it was possible to show that differences in structure in strains of identical heredity were due to the environment. In man a direct proof was impossible. But granted that serological control proved the accuracy of the diagnostic methods, not once in their series of monovular twins had there been any disagreement in known hereditary characteristics. The final proof was that homologous sides of the bodies of EZ pairs were more alike than opposite sides of the same body. Most emphatically, mirror image resemblance was not a regular occurrence in twins; differences between them were environmental in origin and not due to inequalities in the distribution of genetic material.

Prof. Verschuer then showed slides, illustrating the different working of the same genes on the two sides of the body in EZ pairs. He cited a number of instances of the extraordinary degree of resemblance which sometimes occurs, and he vouched for a case where two conductors who had studied and lived apart for twenty years, changed over in the middle of an orchestral concert without orchestra, critics or audience realising that any change had occurred.

Discussing his more recent work on tuberculosis, he pointed out the difficulty of producing a convincing story owing to the natural variability in the course of the disease. In his total material of 80 EZ, 52 resembled each other in the course of the disease and 28 differed; while in 125 ZZ pairs, 94 differed and only 31 resembled each other. In a smaller series which came nearer to being a true random sample, 31 out of 45 EZ resembled each other and 14 differed, the corresponding figures for 118 ZZ being 27 resemblances and 81 differences. The proportion of EZ tended to be high in any series which was compiled by asking patients whether they were twins or not, since a certain proportion of ZZ tended to forget in later life that they were twins, owing to their "not being the proper kind."

This part of the lecture was illustrated by a number of radiograms showing the similar course of the disease process in EZ, including the interesting rarity of both members of an EZ pair with tuberculosis of the os calcis. Resemblances in the course of the disease were even greater than could be expressed in tabular form, the prognosis of concordant tuberculosis in EZ being much worse than in ZZ. Where EZ twins differed in their relation to tuberculosis an environmental explanation could always be found. On the other hand in many ZZ pairs living under identical conditions, one member would develop tuberculosis and the other not.

It was difficult to get true random samples of twins and results from selected samples could be misleading. Luxenburger, working on schizophrenics, got the date of birth and birthplace from the hospital records and wrote to the birth registries asking whether the patient was a twin or not. With the help of an elaborate organisation the after history of the other member of the pair was then traced. Very large numbers were needed for this troublesome method, since only one patient in sixty turned out to have been born a twin, in only one in two or three cases was the other member of the pair still alive and only one in four of the much diminished sample turned out to be an EZ pair. As an example of the working of this method, some 13,000 hospital records of patients with rheumatism led to 12,600 answers being obtained from the registries, of which some 11,000 were usable. This led to some 84 twin pairs of the same sex being discovered, both partners being alive in only half that number.

An easier method was to get the names of all twins from the registries, in a definite period and district, and try to persuade them to come up for examination. A further technique of study was introduced by Gottschaldt who started holiday camps for twins, one on the North Sea, the other on the Baltic, where the reactions of the pairs could be closely noted by trained observers, nurses and psychologists. Yet another important contribution was made by Newman in the U.S.A., who collected a series of EZ pairs where the two partners had been separated at an early age and had grown up in very different environments.

Prof. Verschuer concluded his lecture with a quotation from Galton: "Many a person has amused himself with throwing bits of stick into a tiny brook and watching their progress; how they are arrested, first by one chance obstacle and then by another, and again how their onward course is facilitated by a combination of circumstances. He might ascribe much importance to each of these events, and think how largely the destiny of the stick had been governed by a series of trifling accidents. Nevertheless all the sticks succeed in passing down the current and in the long run they travel at nearly the same rate. So it is with life, in respect to the several accidents which seem to have had a great effect upon our careers. The one element, that varies in different individuals but is constant in each of them, is the natural tendency; it corresponds to the current in the stream and inevitably asserts itself."

EDINBURGH MEDICO-CHIRURGICAL SOCIETY

AT a meeting of this society on June 7 Mr. W. C. WILSON and Dr. C. P. STEWART read a paper on

Blood-chemistry in Burns and Other Surgical Conditions

They had examined the blood chemistry in 41 cases of burning injury, 10 of which were extensive. The main changes were a fall in serum sodium, a rise in serum potassium, blood-chlorides, urea and non-protein nitrogen, and an occasional increase in corpuscular concentration. The serum-chlorides fell while the blood-chlorides rose. These changes began within a few hours of injury but there was considerable variation in the duration and degree of the changes. Special study had been made of the fall of serum sodium. The fall began within two hours of injury and in cases of burns of moderate extent the lowest level was reached between twelve and thirty hours; the normal level was regained about fifty hours after injury. After extensive burns the fall was not always pronounced during the first six hours but became very steep in most cases at a later stage. There were parallel changes in the sodium of blister fluid and cerebrospinal fluid and evidently sodium was lost from other extracellular fluids as well as from blood-serum.

The blood changes were rapidly corrected by administration of desoxycorticosterone acetate (D.O.C A.). This drug also had a beneficial action on circulatory failure—an action which, though sometimes definite and occasionally dramatic, was inconstant It was shown that the circulatory failure associated with shock after burns was not due merely to the low level of serum-sodium nor to any other change in blood-chemistry. Animal experiments suggested that the sodium loss from extracellular fluids took place in injured tissues and was independent of any action of the kidneys or of the central nervous system. The sodium loss was also not due to any inhibitory action on the suprarenal cortex. The evidence at present available suggested that sodium was lost into the cells of damaged tissues, but some of the loss could be accounted for by the passage of sodium into the red blood corpuscles. The action of desoxycorticosterone acetate in restoring the sodium of extracellular fluids and in correcting the other blood changes was confirmed by animal experiment. This action was found to be surprisingly rapid—normal levels were reached within forty-five minutes of intramuscular injection.

Mr. Wilson and Dr. Stewart also gave an account of blood-chemistry changes and the effect of D.O.C.A. in other surgical conditions associated with grave circulatory failure, including acute intussusception in infants, acute intestinal obstruction following generalised peritonitis, and acute pyelonephritis. They showed that when circulatory failure was due mainly or solely to bacteriological intoxication D.O.C A. had no obvious effect on circulatory efficiency, although if the serum-sodium were previously low a normal level was rapidly regained. In other instances, particularly in acute intussusception and acute intestinal obstruction without overwhelming bacteriological infection, D.O C A. appeared to exert a favourable influence on the peripheral circulation.

FACULTY OF RADIOLOGISTS

At the first annual meeting of the faculty, which was held in Liverpool on June 9 and 10, with Dr. R. E. **Roberts**, the president, in the chair, a paper on

Some Problems of Diseases of Bone

was read by Dr J. L. A. **Grout** He pointed out that the diagnosis of bone conditions is particularly difficult because there are no appearances which are absolutely typical of any disease or even of any group of diseases Radiography shows the changes that have taken place—osteoporosis, increased density or the laying down of bone beneath the periosteum—but cannot show the mechanism which has produced these changes. It is never wise to say that a particular picture is always associated with a particular pathological change, for subsequent operation or an unexpected response to treatment will too often prove that such a diagnosis given with great confidence is incorrect

Bony Changes in Anæmia and Leukæmia

Dr. C. G. **Teall** read a paper on a radiological study he had made of the bones in children with blood diseases based on Parson's classification In his opinion demonstrable changes are only found in the subacute and chronic blood diseases when they are due to secondary changes in the bone-marrow. The hæmolytic anæmias are those where blood changes are seen and the earliest radiographic sign is osteoporosis at the metaphysial end of the long bones, a change which it is not easy to distinguish. Cooley's anæmia, said to be found *only in* children of Mediterranean parentage, and the sickle-cell anæmia of negro children, are two conditions in which typical bony changes are seen These are absorption, expansion of the shaft of long bones, and, in the skull, osteoporosis in the frontal region with striations on the vault Secondary leukæmic deposits appear in three forms—streaky bone-absorption followed by generalised osteoporosis and cortical absorption, subperiosteal infiltration with new bone formation, and a rare condition difficult to explain where there is a decrease in density behind the metaphysis similar to that seen in the anæmias and scurvy, probably a result of interference with growth.

The Adult and Fœtal Circulation

Dr. A. E **Barclay** gave a demonstration of the circulation by means of cineradiography and serial radiograms The umbilical veins of fœtal sheep and cats just delivered by cæsarean section had been injected with Thorotrast, Lipiodol or Uroselectan B The femoral artery and vein and the vena cava had also been injected. The circulation in the adult animal was shown by injecting the superior and then the inferior vena cava The course of the opaque substance in the fœtus showed the relationship of the ductus arteriosus to the normal vessels and also the blood passing through the ductus Considerable difficulty was at first experienced, but the accidental injection of the femoral artery in attempting to find the vein in a small fœtus showed the opaque material flowing up the artery and passing through the ductus It was also possible to demonstrate the crossed circulation in the right auricle Injection of the inferior vena cava showed that circulation was from the right auricle to the right ventricle and thence to the conus arteriosus and through the pulmonary stem, but at the same time some opaque material outlined the aorta, showing that it must have passed through the ductus. Dr. Barclay thought that this showed conclusively that although the foramen ovale tends to close at birth the ductus remains patent until the lungs are well expanded.

The Cancer Problem

On the second day of the meeting different aspects of cancer were discussed by Prof **Henry Cohen** as a physician, Sir **Robert Kelly** as a surgeon, Prof. W. M **Frazer** as a public-health official and Dr. **Ralston Paterson** as a radiotherapist Prof **Cohen** said that the diagnosis of cancer still depends on the care with which a history is taken and on the clinical examination No specific test for cancer has yet been found and if there were one it would probably only be used when clinical signs had attracted attention, and it might lead to much distress before the primary site was discovered At present the radical treatment of malignant disease may be described as anatomical, or, on the analogy of a battle, it may be said that surgery aims at removing the entire battlefield, aggressor and defender alike. The physician must search for another line of approach, and for this it is necessary to review recent research The production of experimental cancer by carcinogenic agents, the curious phenomena of tumours produced by a virus, particularly the Shope *papilloma* and the part played by heredity, all suggest that ultimately cancer may be prevented rather than cured. The chemical changes studied by Warburg, who demonstrated glycolysis in the absence of oxygen in cancer and other rapidly growing cells suggest possible therapeutic methods. More recently the demonstration that, whereas the hydrolysis of normal cells produces only lævorotatory amino acids, hydrolysis of malignant cells produces high proportions of dextrorotatory amino-acids, the change increasing with the degree of malignancy, suggests an intrinsic and essential chemistry of malignancy. There are also certain clinical symptoms, such as the condition known as the Plummer-Vinson syndrome, which are definite precursors of cancer and which can be prevented by treatment of the underlying condition, in this case by the administration of iron. In conclusion Prof Cohen said that although much is known and progress continues the key of the clue leading to the path to complete success in cancer therapy has yet to be found.

Sir Robert Kelly was particularly interested in the unanswered questions of malignant disease. Why when the rest of the alimentary tract is so often affected should the small intestine be almost immune? Why should the lower lip be a common site and the upper lip a rare one? How can an early diagnosis always be expected when it may be necessary to wait for months after a secondary manifestation has been found before the primary declares itself? The difficulty of diagnosis and the uncertainty of prognosis, he said, are facts very difficult to influence.

Prof **Frazer** discussed the probable effect of the Cancer Bill on the care of the cancer patient. He looks forward to improved coöperation between the different branches of medicine, and believes that the scheme of special clinics and the responsibility of the local authorities will lead to great improvements. He pointed out, however, that the effect of administrative advances is always determined by the state of medical knowledge, and improved facilities for treatment can only ensure that the patient gets the best treatment at present available.

Dr **Ralston Paterson** pointed out that the previous speakers had all agreed that at present surgery, radium and X rays are the only recognised methods of treatment. The place of surgery and radiotherapy is now becoming clear, and it is possible to define which types of malignant disease should primarily have surgical and which radiation treatment. When the possibility of cure is considered it is clear that the sites for which much can be expected are breast, mouth, uterus and skin; in other sites cure can be looked for in favourable cases, but the proportion seen in an early stage is so small that the cure rate is very low. Dr Paterson therefore thinks it important to regard the treatment of cancer as divided into two methods, curative and palliative. Where curative treatment is undertaken severe reactions may be justified by the possibility of cure, but palliative therapy must be planned as such from the beginning and should not increase the discomfort suffered by the patient.

Mr G F **Stebbing** thought the speakers rather pessimistic and hoped for better results.—Mr B W **Windeyer** urged the need for convalescent accommodation for patients after radiation treatment.

REVIEWS AND NOTICES OF BOOKS

The Dysenteric Disorders

By **Philip Manson-Bahr**, C M G, M D Camb, F R C P, senior physician to the Hospital for Tropical Diseases, London; consulting physician to the Colonial Office and Crown Agents for the Colonies. London: Cassell and Co. 1939. Pp 913. 25*s*.

In this volume Dr Manson-Bahr has undertaken with amazing zeal a comprehensive review and analysis of the dysenteries, the various forms of colitis, sprue, the helminthic diseases of the bowel, and the different diarrhœas which form such a complex assembly in practical medicine. The importance of such a work requires no emphasis. During the last few decades it has become recognised that many diseases of the bowel, presenting similar symptoms, may be caused by entirely different agents, and that successful therapy depends on their accurate differentiation.

The opening section is concerned with methods of investigation, including a useful chapter on the sigmoidoscope, and with a historical and geographical survey of the dysenteries. The next section deals systematically with true bacillary dysentery, with the protozoal infections: amœbic, ciliate, flagellate, coccidial, plasmodial and leishmanial, with the helminthic infestations, and with the infective diarrhœas such as food poisoning and cholera. The author next discusses the steatorrhœas and the various forms of colitis. The final section covers the further causes of dysenteric diarrhœa and the manifestations of malignant disease of the colon, polyposis, actinomycosis, tuberculosis, syphilis, lymphogranuloma and Crohn's disease, with a chapter on the mechanical causes of diarrhœa. There is an appendix by the author's assistant on the intestinal protozoa and on technical methods for the isolation, cultivation and identification of the various pathogenic agents, and, finally, there is a useful classified bibliography. The work is largely based on Dr Manson-Bahr's personal experience, but the work of others receives due emphasis. The volume is well illustrated with photographs, drawings and coloured plates, many of which testify to the author's artistic ability.

Personal Aggressiveness and War

By **E F M Durbin**, B A Oxfd, and **John Bowlby**, B Chir Camb. London: Kegan Paul, Trench, Trubner and Co. 1939. Pp 154. 5*s*.

Most of us these days find it hard to take an objective view of the causes and nature of war, and any help that psychology can give us will be correspondingly welcome, though not necessarily agreeable. The authors of this book write with an admirable detachment calculated to bring the conception of war into both historical and social perspective. Their first part is an essay in which they "describe and analyse the general psychological forces lying behind the timeless and ubiquitous urge to fight and kill." In their second part, which has the lion's share but is still modestly described as an appendix, as when it appeared in the symposium "War and Democracy," they give in detail the psychological evidence for their theories.

They examine the contentions that either capitalism or nationalism may be the fundamental cause of war, and find war to be of more primitive origin than either. War, they think, is "due to the expression in and through group life of the transformed aggressive forces of individuals," and its cure is not therefore to be sought in remedying the symptoms of transformed aggression such as class hatred or nationalism, but in diminishing the aggression itself This can only be done by diminishing the frustration of the child. Charity, in fact, should begin not only at home but in one particular room, and that the nursery This thesis will inevitably recall Glover's "War, Sadism and Pacifism."

In the second part, Bowlby considers war in particular relation to Zuckerman's studies of behaviour in monkeys, and Isaacs's observations on children He compares the sexual fights on monkey hill and amongst primitive peoples with the behaviour of English sailors on Pitcairn Island, and the authors share with Hobbes the view that without government man's passions and rivalries make his life "solitary, poor, nasty, brutish and short" They point out that aggression in childhood is singularly violent, is more manifest in those who have been the subject of violence, and is provoked either by threats to possessions, by jealousy or by situations "in which the child frustrates himself by his own incapacities or wilfulness" They also consider aggression in relation to the scapegoat in the light of recent Jewish persecution.

The book as a whole deserves to be widely read, for it points the way to the constructive treatment of what is clearly an endemic but we hope, with the authors, not an incurable disease.

Richtlinien Practischer Orthopadie

By Dr. ALBERT LORENZ. Vienna: Franz Deuticke 1939. Pp. 464. R.M.15.

THIS textbook is intended for the specialist. Its interest lies in the clear presentation of the practical problems of orthopædic surgery, and particularly in the analysis of the development of the orthopædic technique of the author's famous father, Adolf Lorenz, the pioneer of the "bloodless reduction" of congenital dislocation of the hip. There are 38 sections, of which 3 are introductory and 6 are devoted to general principles In each a concise summary is given of the steps by which modern technique has been attained, with the names of those who have contributed to its evolution No other bibliography is supplied Methods of treatment and operations are set out in detail The few illustrations are clear line drawings.

The author's comments are shrewd. He reminds us that no advance in operative technique entitles the orthopædic surgeon to neglect aftercare, which embraces every type of apparatus and every form of physiotherapy, and that no operative procedure should be more dangerous than the disease it treats, using this postulate as an argument against open reduction of congenital dislocation of the hip He has a poor opinion of the spontaneous reduction of this condition by splinting, popularised by Putti, and he does not mention the simple Forrester-Brown splint, which has given admirable results in the large Bologna clinic for the last seven years, as well as in the hands of its inventor. He puts two years as the ideal age for treatment, though he would manipulate and plaster quite young children. As to open operations most experienced surgeons would agree with Dr. Lorenz that roof-grafts should be reserved for cases which are reducible but unstable, and that the joint should be explored only when obvious obstruction in the soft parts hinders reduction in a young subject. Cases in which the head cannot be brought easily opposite the acetabulum are suitable for the palliative bifurcation osteotomy introduced by Adolf Lorenz This form of section is convenient for cases in which the small trochanter is already opposite the acetabulum, but if the dislocation is a very high one the subtrochanteric division of Schanz produces the best results.

Dr. Lorenz notes that in congenital club-foot manipulation and plaster-of-paris have also replaced open operation except in resistant cases He thinks that manipulative reduction is rarely possible without tenotomy of the tendo Achillis, *after* correction of the front of the foot Over-lengthening the tendo Achillis should be avoided, especially for spastic cases, as the resulting calcaneo-cavus is far more disabling than the original equinus For torticollis open dissection followed by plaster fixation is recommended.

In the section on plaster-of-paris, the reader is warned that unpadded plasters are only safe for inpatient work, and that plaster is not a corrective medium but only a method of fixation when correction is already attained Massage and gymnastic exercises without elaborate apparatus are favoured No mention is made of exercises in a warm pool for the correction of spastic contractures and faults of balance; for cerebral palsies only tenotomies and plaster are advised

The clear type and short paragraphs make this manual far more readable than many German books of its size

Fundamentals of Internal Medicine

By WALLACE MASON YATER, M.D., M.S. (in medicine), professor of medicine and director of the department of medicine, Georgetown University school of medicine. London: D. Appleton-Century Company. 1938. Pp. 1021. 35s.

THE student in his first clinical years must be a little bewildered by the number of textbooks designed to introduce him to the science and art of medicine; no doubt his choice is influenced by local custom and his tutor's preference This new work from the Washington school cannot claim to fill any particular gap in medical teaching which its predecessors have left open or to supply any special need, but it is none the less excellent It has the merits of a homely and didactic style, with a reasoned approach and a balanced presentation of material; it is well illustrated and it contains many useful wrinkles and much sensible advice A slight fussiness of detail, especially in regard to tables, has made it perhaps a little too large for the student's armpit. Those still undecided among the competitors for their favour and those who would like or need a change would do well to consider this new textbook.

Les tumeurs osseuses du nez et des sinus

By C. E. BENJAMINS. Monographies otorhinolaryngologiques internationales. Bordeaux: Éditions Delmas. 1938. Pp. 306. Frs.60.

THE author classifies these tumours as follows: (1) benign tumours, including osteoma, osteochondroma, osteofibroma, angio-osteoma, fibro-osteoma tumours with atypical calcification and tumours of osteitis fibrosa; (2) malignant tumours, including osteosarcoma, osteochondrosarcoma and osteoblastic epithelioma. Some of these are more generally regarded as inflammatory growths than as genuine neoplasms Thus among the tumours of osteitis fibrosa neither Recklinghausen's disease caused by dysfunction of the parathyroid glands, Paget's disease, nor leontiasis ossea can properly be considered as true neoplasms. All these tumours of the bones are rare, and this little monograph gives a useful description of their pathology, symptoms, and methods of treatment It contains numerous illustrations of cases, specimens, and photomicrographs.

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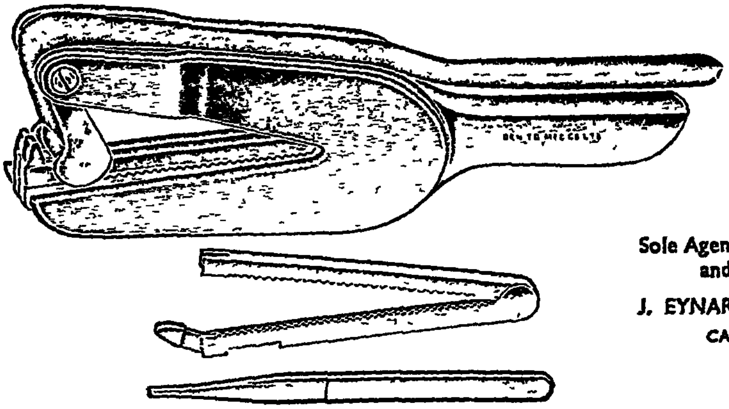

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LONDON SATURDAY, JUNE 17, 1939

ABORTION AND PROFESSIONAL SECRECY

THE report of the Interdepartmental Committee on Abortion, which we summarised last week, displays afresh the conflict of opinion on the related aspects of professional secrecy On the one side there is the tradition of non disclosure in its absolute form, the reluctance of the medical practitioner to perform the functions of a detective, and the suspicion that the association between public health and the police has already gone far enough Those views definitely discourage any idea of compulsory notification, whether of all abortions or merely of therapeutic abortions Moreover, they are not the views of medical men only One member of the committee, Mrs THURTLE, affirms in a vigorous minority report that attempts to make the medical profession coöperate with the policeman in reporting any suspected case of criminal abortion will simply drive the evil further underground and will deter women from obtaining medical advice when they most need it Mrs THURTLE deprecates as retrograde any step that might undermine the faith of the women of this country in the trustworthiness of the medical profession On the other side there are those who, knowing the grave menace of maternal morbidity, feel that medical practitioners by their inactivity aid and abet the furtive and dangerous operations of the criminal abortionist Six members of the committee (including Lady RUTH BALFOUR and Sir COMYNS BERKELEY) sign a reservation to the full report in order to emphasise the historic observations of Mr Justice AVORY that the desire to preserve professional confidence "must be subordinated to the duty which is cast upon any good citizen to assist in the investigation of a serious crime"

Mr. Justice AVORY, it will be remembered, issued this warning when charging the grand jury in 1914 in a case where three doctors had attended a patient who had clearly died as the result of an unqualified woman's illegal interference To one at least of the three the dying patient had confided the abortionist's name No information was given to the police, no deposition was taken, and no death-bed statement was secured which could have been used in a court of law A statement made by the deceased patient to a doctor would not have been evidence, but Sir HORACE AVORY was concerned to point out that, when a person is seriously ill, and in the opinion of a medical man is unlikely to recover, the evidence of such a person can be taken by a justice of the peace The learned judge's complaint was that the ends of justice were defeated because none of the doctors had given the police the opportunity to secure the essential evidence on which the alleged abortionist could be convicted The sequel is on record and the committee's report recalls it Next year the British Medical Association resolved that a medical practitioner should never voluntarily disclose, without the patient's consent, information obtained from the patient in the course of professional duties In 1916 the Royal College of Physicians, after taking counsel's opinion, passed a like resolution It recommended that a doctor who was convinced that criminal abortion had been practised on his patient should urge her to make a statement which might be taken as evidence against the abortionist, provided that the patient's chance of recovery was not thereby impaired, but it stated that the college was advised that the medical man was under no legal obligation to urge her to make a statement, or, if he did so and she refused, to take any further action If the patient died, the medical practitioner was recommended to refuse to give a certificate of the cause of death, and to communicate with the coroner

There the matter was left, and there, it seems, the interdepartmental committee as a whole is content to leave it still The committee examines various suggestions for facilitating the conviction of the criminal abortionist If the identity of witnesses were concealed, there might be a greater readiness to give evidence This suggestion does not contemplate an act of Parliament to upset the existing law of forensic publicity, it proposes rather the adoption of a rule of practice akin to that whereby magistrates and judges appeal to the press not to publish the name of the vital witness in blackmail prosecutions This practice is said to have done much to stamp out the abominable crime of blackmail, but the committee regards the analogy as imperfect The patient who has consented to a criminal abortion is in law an accomplice, the witness in the blackmail prosecution is not The distinction is rather technical If the witness in blackmail cases is not *particeps criminis*, he has nevertheless usually done something to be ashamed of and can be cross-examined with a view to discrediting his character and the value of his testimony Another suggestion is that the patient should be legally exempt from prosecution, she would then cease to be an accomplice and the requirement of corroboration would disappear This proposal, too, the committee declines to accept, since it *might* encourage a woman to seek abortion Many people will nevertheless think that the legal authorities might simplify the position in some degree It is ridiculous to pretend that the patient is in danger of prosecution when everybody knows that a witness who gives evidence for the Crown in such a case will not be prosecuted Almost the only suggestion that the committee accepts is the grant of authority to issue a warrant to search the premises of a person who is suspected on reasonable grounds to be an abortionist At present the police have no such power of search unless they have entered the premises for the purpose of making an arrest The committee approves also the recommendation that coroners be invited to inquire with special vigilance into deaths following abortion and to satisfy themselves, so far as is possible, that there has been no criminal interference The committee dismisses the idea of heavier sentences in cases where conviction is secured and it does not consider that any practicable scheme for compulsory notification of pregnancy is likely to be helpful.

It may be that the views of the medical and legal professions are changing. The six signatories to the reservation already mentioned are plainly not satisfied with the negative obligation laid upon the medical man. In their opinion a doctor, especially when he comes by information as a result of his own observation and not as a result of the patient's confidences, ought to inform the police if his examinations reveal injuries or foreign bodies indicating the use of instruments or slippery-elm bark. By cooperating in the exposure of criminal abortionists, they say, the medical profession has it in its power to do a great service to the community. They believe that many doctors would welcome relief from their present dilemma in which their legal and public duty is at variance with the course prescribed by the Royal College of Physicians. They hope that the college will now re-examine its recommendation of 1916 which has had the effect of limiting the doctor's power of assisting justice to those rare cases where the patient consents to disclosure. Whether the recent report will stimulate any change of view among the lawyers it is not easy to prophesy. Here and there the layman thinks he detects signs that the law relaxes its insistence on the curiously rigid rules of evidence, and on the presumption of the innocence of the accused, where the administration of justice is in danger of being defeated. The legal and judicial authorities must make up their minds whether the frustration of prosecutions for criminal abortion is now so grave a matter as to justify departure from the ordinary standards. One may add that the police are often deterred from prosecution by the difficulty of securing conviction from juries which regard abortion as a venial offence. This public toleration of abortionists will either have to be accepted as reasonable or definitely countered. Meanwhile the doubts that may be excusable in a juryman are inconvenient in a judge, and it is to be hoped that one effect of any legal changes contemplated will be to reduce the apparent inconsistency in the attitude of different judges towards this crime.

HÆMOGLOBIN ESTIMATION

THE increasing reliance that the practitioner puts on the hæmoglobin percentage and the colour-index in determining his treatment of anæmias makes the need for the standardisation of hæmoglobinometers increasingly obvious. It is manifestly absurd that two laboratories may return reports on the hæmoglobin of the same patient which differ by as much as 20 per cent. without any hint to the practitioner that the difference depends only on the different instruments used. Thus 100 per cent on the Haldane scale is equivalent to about 13·8 grammes of hæmoglobin per 100 c cm. of blood, whereas the same reading on the Sahli scale is equivalent to about 17·3 g., yet readings taken with either apparatus are returned as so much per cent. More attention would perhaps have been given to this state of affairs if it affected hospitals, but in a hospital all readings are usually [illegible] one type of instrument and the difficulty does not arise. Nor does it affect the practitioner who does all his own estimations. It is most serious where the doctor receives reports on his patients from several laboratories, hospital or private

A universal normal for hæmoglobinometers cannot be established with the same ease as it has been, say, for blood-urea—by taking the average of a large number of healthy people—because of the surprising variations encountered in different parts of the world. HOLIDAY and his colleagues[1] pointed out that Price-Jones found the mean of a hundred London students to be 105 per cent. on the Haldane scale and that of twenty Boston students 112 per cent., whereas other observers have reported "normals" of 112–115 per cent Haldane for males and about 100 per cent. for females. The obvious solution to the difficulties is to discard percentages and state all results in grammes of hæmoglobin per 100 c.cm. of blood but, as Prof. MCGRATH[2] remarked in his eloquent appeal for standardisation a few weeks ago, practitioners have become used to readings expressed in percentages and to the implications of the colour-index. The fact that a universal standard cannot well be based on averages and must be arbitrary is, however, no reason for the adoption of no standard at all. Hæmoglobinometers can be calibrated accurately enough for practical purposes by comparison with the results obtained by determination of the oxygen-carrying power or iron-content of the blood, or by photo-electric methods. Such calibrations should be the same for all types of apparatus, and it will be for different localities or different laboratories to determine their own normal in terms of this calibration The Haldane scale has the claims of tradition to be adopted as the standard and the British Standards Institution is now producing an "absolute" Haldane scale. Pathologists should therefore state on their reports what instrument they use and how its readings correspond with Haldane. The practitioner will then at least be able to tell at once whether the reports he receives are strictly comparable.

LYMPHOCYTIC CHORIOMENINGITIS

WHILE working at Washington on St. Louis encephalitis ARMSTRONG and LILLIE in 1934 identified the virus of lymphocytic choriomeningitis. Since then the disease has been described not only in the United States but also in England, France and Japan; and there is suggestive evidence of its presence in North Africa and Eire. In some ways the name given to it is unsatisfactory, for LÉPINE, MOLLARET and KREIS in 1937 found that of a number of patients experimentally infected with the virus less than half developed nervous symptoms, although all suffered from fever In the same year WOOLEY, ARMSTRONG and ONSTOTT obtained evidence of immunity to lymphocytic choriomeningitis in 11 per cent. of 1248 sera collected from various parts of the United States and the great majority of the positive sera were from persons giving no history of an infection of the central nervous system Furthermore, the ttempt to equate lymphocytic choriomeningitis ith acute benign aseptic meningitis has broken own On the one hand only a comparatively nall proportion of cases diagnosed clinically as cute benign aseptic meningitis have yielded the irus or given evidence of specific immunity On e other hand, the clinical symptoms and patho- gical lesions have not uncommonly pointed to omething more than merely a benign involvement f the meninges and choroid plexus In a fatal ase described by VIETS and WARREN in 1937 here was pathological evidence of encephalitis, linically the cases described in our own columns[1] y FINDLAY, ALCOCK and STERN in 1936 also esembled encephalitis while in the case reported n our present issue by Dr MACCALLUM and Dr INDLAY the original diagnosis was one of polio- iyelitis In addition, two fatal cases of consider- ble importance have been described in America, y BARKER and FORD in 1937 and by MACHELLA, VEINBERGER and LIPPINCOTT this year[2] In the ormer, four months after an acute episode diag- osed as lymphocytic choriomeningitis, the patient eveloped severe arachnoiditis which caused com- lete obliteration of the spinal subarachnoid space n the latter there was also blockage of the sub- rachnoid space at the base of the brain, intense nfiltration of the choroid plexus, and severe nflammatory changes in the subependymal tissues

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[1] Holiday, E R, Kerridge, P. M. T, and Smith, F. C., Lancet, 1935, 2, 661

[2] McGrath, J, see Lancet, May 27, 1939, p. 1211.

If there is still uncertainty about the clinical ymptoms and pathological changes produced by he virus of lymphocytic choriomeningitis, the ame is also true of the epidemiology of the disease A number of observations, however, have been nade which suggest possible means of spread The irst clue is afforded by the work of TRAUB three r four years ago, when he found that lymphocytic horiomeningitis was occurring as an acute and ighly virulent epizoötic in a mouse colony kept n the laboratory FINDLAY, ALCOCK and STERN[1] solated the virus from the breeding stock of a mouse fancier in this country, LÉPINE and SAUTTER ound it in the mouse stock of the Pasteur Institute n Paris, and KASAHARA and his colleagues obtained he same agent from laboratory animals in Japan An important discovery by TRAUB was that the virus of lymphocytic choriomeningitis is excreted by mice both in the urine and in the nasal secretions He has lately reported[3] that in a mouse colony infection occurred during intra-uterine life, while young and old mice continued for long periods to excrete virus in large amounts in the nasal secretions By this means the disease continued as an enzoötic for four years, although with considerable diminution in virulence for the members of the infected herd In this country, too, infection has continued for four years in a mouse colony, although throughout this time the disease has remained entirely asymptomatic with no undue mortality The virus, however, has been isolated from healthy carriers

These observations suggest that the virus may be transmitted from mice to men lymphocytic choriomeningitis thus having analogies with leptospiral jaundice which spreads from apparently healthy rats to men Until recently direct evidence connecting human cases of lymphocytic choriomeningitis with infected mice was lacking Now ARMSTRONG and SWEET[4] have isolated the virus from wild mice trapped in two houses in each of which there had been a case of lymphocytic choriomeningitis, from which the virus was isolated. Since in both instances the human patient was ill in her house for only four days before being removed to hospital, it is hardly credible that both could have infected the mice of their respective abodes In addition, three inmates of the two houses showed immune bodies to lymphocytic choriomeningitis—a finding which suggests an exposure to infection in the home rather than a human contact infection Nevertheless the possibility of infection passing from man to man cannot be wholly excluded in view of the isolation by MACCALLUM and FINDLAY of the virus from the nasopharynx of a patient as long as 12 weeks after the onset of the illness In laboratories, although infection has rarely been accidentally transmitted to man accidental infection of rhesus monkeys has taken place In one such instance in this country two rhesus monkeys became infected, presumably through the nasopharynx, because a small amount of hay got into their cage, having fallen from a cage containing guineapigs suffering from the disease From these observations it seems that the two essentials in controlling the spread of lymphocytic choriomeningitis are the isolation of human cases and the wholesale destruction of domestic mice The latter conclusion should appeal especially to the feline population, but until further experiments have been made it is uncertain whether cats can be used with entire safety for the destruction of infected mice A small proportion of spleens from adult dogs obtained at random in this country have been found to contain a virus pathologically and serologically similar to that of lymphocytic choriomeningitis, and though FINDLAY and STERN in 1937 showed that dogs inoculated intracerebrally with the virus do not develop symptoms, it now appears that they may act as carriers The susceptibility of cats was examined by B KREIS in the same year with somewhat equivocal results, and further observations are necessary to determine whether they too may not act as symptomless carriers

Lymphocytic choriomeningitis differs from many other acute virus infections of the human nervous system in that extensive epidemics have not been recorded It occurs rather in the form of foci involving two or three persons, either living in the same house or working in the same building—a fact explicable if infection is primarily from mouse to man and occasionally from man to man. But the possibility of widespread epidemics of lymphocytic choriomeningitis cannot however be entirely ruled out, since COGGESHALL[5] has found that the mosquito *Aedes ægypti* is capable of transmitting the virus by bite in 4–15 days after an infective feed.

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[1] Findlay, G M, Alcock, N S, Stern, R O *Lancet* 1936 1 650

[2] Machella, T E, Weinberger, L M, and Lippincott, S W, *Amer J med Sci* May, 1939 p [illegible]

[3] Traub, E, *J exp Med* 1939, 69 801

[4] Armstrong, C, and Sweet, L K, *Publ Hlth Rep*, Wash [illegible] 1939 p [illegible]

[5] Coggeshall, L T *Science* June 2, 1939 p 515

ANNOTATIONS

HOSPITAL PROVIDENT SCHEME FOR LONDON

IT was announced at the meeting of King Edward's Hospital Fund for London last week that a committee appointed by the fund has prepared a scheme for the insurance of middle-class families in London against the expenses of hospital treatment Participating hospitals will be required to keep to a fixed schedule of charges for subscribers It may not be practicable to provide the same accommodation for subscribers at all hospitals, for example while the proposed fee should be sufficient to cover the cost of a private room at suburban hospitals, at the larger hospitals it may be necessary to treat subscribers in contributory wards intermediate between the ordinary wards and the private rooms. The benefits will be available only where the treatment is undertaken by approved consultants or specialists, of which a list will be prepared Payments for medical attention will be made direct, and their amount will not be disclosed to subscribers. The suggested income limits are £400 for single subscribers, £550 for married subscribers with no children, and £700 for married subscribers with dependants under eighteen years, the corresponding annual rates of subscription being £2 12*s*, £3 12*s* and £4 4*s*. The subscription will cover the whole cost of maintenance and medical and surgical treatment in hospital for a maximum period of four weeks in any one year, with grants in aid of additional specialist services and of treatment in a nursing-home The amounts of the hospital and medical fees have yet to be settled. There will be certain exclusions from the scheme, for example mental diseases, maternity, pulmonary tuberculosis, tonsils and adenoids in children, and infectious diseases New members will not be entitled to benefit until they have subscribed for six months, and they will not be admitted if they are over sixty-five. The scheme is at present tentative, and the final approval of the hospitals, the British Medical Association and other interested bodies will be required before it can be put into operation, but if general agreement can be obtained it is hoped to launch it in the autumn.

SUPPURATIVE PERICARDITIS

As Bigger[1] has lately pointed out, there are two curious facts about suppurative pericarditis: one is the comparative rarity with which it is diagnosed during life, and the other is the hesitant attitude of many physicians towards surgical treatment even when a diagnosis is reached The difficulty in diagnosis arises because pericarditis often develops late in the course of some grave general infection like osteomyelitis or pneumonia, in which a worsening of the patient's condition may be more readily attributed to the natural progress of his disease than to the onset of a fresh complication It is true that under these conditions it may be hard to appreciate such classical symptoms as epigastric pain and vomiting followed by an increasing dyspnœa and pain on swallowing; but once an effusion has reached substantial size the physical signs of heart tamponade are clear and distinctive The cardiac shadow is enlarged, as may be readily determined by fluoroscopy, and the veins in the neck are prominent Direct observation of the venous pressure will show a definite increase—19 c cm. of water in one of Bigger's cases—and at the same time the arterial pressure falls

The first operation for suppurative pericarditis was done by Bardenheuer in 1884 and he approached the pericardium after resection of the fourth and fifth costal cartilages on the left side. It is interesting to see that Bigger still employs this approach, for ever since Curschmann showed that a pericardial effusion must always cause a close approximation of the heart to the anterior wall of the pericardium most surgeons have preferred to drain the sac from the costoxiphoid angle It is undoubtedly true that the costoxiphoid angle is the only safe place for paracentesis of the sac, and the advantages of dependent drainage are just as great here as in any other form of suppuration. These points are discussed in detail in a monograph by Marfan.[2]

Early operation for empyema thoracis is now commonly and correctly deprecated, save in certain exceptional circumstances, but there is every reason for early intervention for pyopericardium. Drainage may be carried out rapidly under local anaesthesia with a minimum of general disturbance, and it now seems clear that the earlier the operation is done the less likely is constrictive pericarditis later. Bigger's paper is illustrated by some interesting kymograms showing the return of normal cardiac contractions eight months after one of his five successful operations.

DROWNING

DROWNING is such a common accident, and the art of resuscitation has evolved so steadily and satisfactorily, that it comes as something of a shock to realise how little we know about the actual process. Experiments on dogs have now been carried out by a group of Canadian workers[3] with the object of following the reflex responses and changes in blood pressure and blood gases during drowning Their findings show nothing unexpected, in the sense that all the changes, with one possible exception, seem reasonable, but they confirm some points that the non specialist observer might only have suspected and establish certain time-relationships which probably hold roughly for human beings. Lougheed and his colleagues find that the first respiratory reaction is breath-holding, which may last for 1½ min. and is followed by "gasps" The latter may lead to filling of the lungs with water, but they usually provoke reflex spasm of the glottis so that only a few cubic centimetres of water may enter the trachea, and occasionally closure of the glottis may be so complete as to exclude water from the lungs altogether During this phase the dog swallows rapidly and this leads to violent vomiting after 3 min immersion After a further 2 min all movements cease Relief of asphyxia within about 15 sec of the cessation of respiratory efforts is said to ensure spontaneous recovery, though the statement seems to involve a contradiction in terms For a short time after this artificial respiration is successful, and it must be continued for a time proportional to that which has elapsed since the cessation of spontaneous effort As adjuvants to resuscitation adrenaline, ephedrine, Coramine, Cardiazol and other cardiac stimulants are ineffective, and venesection fails to relieve the circulation. Atropine is only helpful if given before the experiment and cocaine does not prevent laryngeal spasm. Amyl nitrite, however, is of great value in the late asphyxial period, and the addition of carbon dioxide to the inspired air not only increases the efficacy of artificial respiration but improves the post experimental condition of the animal For some reason which is not well understood, the carbon-dioxide content of the blood falls after a preliminary rise, and if this tendency is enhanced by hyper ventilation—e g , by allowing the animal to breathe occasionally during a period of asphyxia—the condition of acarbia becomes pronounced. In accidental drowning the struggles of the victim may bring him intermittently to the surface and closely simulate this state of affairs Carbon dioxide, therefore, supplies a deficiency as well as stimulating the respiratory centre[4] The only other aid to resuscitation which was found useful is a tracheal catheter to counteract spasm of the glottis It is noteworthy that whereas complete asphyxia for 5 min was fatal to these dogs, relief from respiratory obstruction for 5 sec out of every minute was sufficient to keep them alive for at least half an hour The time relations in this experiment may be slightly abnormal on account of the anæsthetic, but the striking difference made by even the slightest opportunity for breathing leads point to the plea of the editor of the *Canadian Medical Association Journal* that in accidental drowning artificial respiration should be continued until rigor mortis sets in

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[1] Bigger, I A, *Ann Surg* May, 1939, p 763

[2] Marfan, A. B, La fonction du pericard, Paris, 193

[3] Lougheed D W, Janes, J. M, and Hall, G. E, *Canad med Ass J* May, 1939, p 423

NON-TUBERCULOUS MESENTERIC LYMPHADENITIS

Wise[5] of Baltimore has noted two curious features in a small series of cases of the non tuberculous form of abdominal lymphadenitis—namely, a seasonal incidence and uniform recovery after appendicectomy The latter is particularly remarkable because the appendices he removed showed no obvious pathological changes In the discussion on Wise's paper I M Gage of New Orleans said he had found enlargement of the mesenteric lymph nodes in nearly two thirds of his cases of chronic appendicitis, and he urged that the appendix should be removed in all cases with symptoms suggesting either chronic appendicitis or mesenteric lymphadenitis

Until comparatively recently children showing these enlarged lymph nodes were strongly suspected of being tuberculous and treated accordingly, but though it is now clear that the majority are non tuberculous little is known about the cause of the condition White and Collins[6] suggest that it may represent an abortive form or stage of infantile paralysis, for the lymphadenopathy and abdominal symptoms in that disease may be somewhat similar Wise found nothing to support this view, but he favours some virus or toxin as the cause He has removed and studied nodes from several cases and found them sterile on culture and without typical histological changes, though in two adults the affected nodes showed calcification Gage, on the other hand, obtained cultures of enterococcus in some of his cases

Of Wise s nine cases all but one were admitted to hospital during the months of August and September —six in 1937 and two in 1938 In spite of a sharp look out only one case was diagnosed in the interval, and this one was atypical, for the patient had been subject to various allergies and intermittent abdominal symptoms all his life This seasonal incidence does not seem to have been previously noted, and without confirmation it is difficult to know whether it is significant The condition is not confined to children, two of Wise's series being adults of 43 and 25 years The onset is usually more subacute than acute, with abdominal discomfort mainly felt in the right lower quadrant of the abdomen, and sometimes nausea and vomiting Tenderness is slight, with little or no muscle guarding, and there is no uniformity in the white cell count or in the type of pyrexia Such a case is likely to be diagnosed as appendicitis, and it is a comfort for the surgeon who operates to know that if he finds only lymphadenitis removal of the appendix may still result in cure

GOITRE IN TIPPERARY

WORKING with a grant from the Irish Medical Research Council, Dr M Naughten and Dr J C Shee describe[1] a survey of the occurrence of goitre in the Galtee and Slievenamon areas of co Tipperary where this disease has long been known to be endemic The survey has consisted of measurements of thyroid enlargement in children of five age groups between 4 and 14 years, 1000 children of each sex being included. The results are in accordance with those of previous studies of the kind in so far as the age-incidence of goitre is concerned. They show, however, the surprising fact that thyroid enlargement in this region is equally prevalent (total incidence about 65 per cent) in boys and girls—an observation which conflicts with the accepted view that in goitrous regions the incidence of the disease is three or four times as high among girls as among boys It may be presumed that this local endemic is the result of local environmental iodine deficiency , it would be interesting to know whether this supposition is supported by the results of iodine analyses of the soil, water and milk-supply of the district

THE WATCH BELOW

ON July 1 will come into force an agreement reached by a joint committee set up by the Shipping Federation, the National Union of Seamen, and the mercantile officers' societies, and adopted by the National Maritime Board. It consists of regulations and recommendations, of which the former for the first time compel owners of foreign going ships to supply clean bedding, besides bunks, to a crew joining a ship The men, on their side, accept the responsibility of keeping bunks and bedding clean and agree to the imposition of penalties for breaches of this regulation. The recommendations include the advice that the sleeping quarters should be tidied daily in the men's own time and cleaned once a week, and the mess rooms and lavatories cleaned daily in working hours as part of the ship's routine , that the crew's quarters should be inspected daily by the master or his deputy and the result recorded weekly in the ship's log and daily in the owner's Any sign of vermin should be instantly reported, and insecticides and disinfectants should be supplied It is also recommended that in harbour the dynamo should not be stopped if it is needed for lighting or ventilating the mess decks, and that every encouragement should be given to the men to look on their quarters as a "home from home' These regulations and recommendations apply to old ships as well as new

The story of the very slow and very gradual improvement of the merchant seaman's lot on board British ships was outlined in our columns[2] when the Board of Trade instructions were last revised It was then provided that in new ships the crew s quarters should be constructed amidships or aft instead of before the mast, and that the different watches should have separate sleeping-quarters. Regulations were also made to ensure better lighting and ventilation

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[4] See *Lancet*, 1934 2, 841

[5] Wise W D Ann Surg May 1939 p 827

[6] White C S and Collins J L J Amer med Ass 1936 107 1023

[1] *Irish J med Sci* April 1939 p 164

[2] *Lancet*, 1937 2 4 9

RUSSIAN BIRTH-RATES

THE completed figures of the census taken on Jan. 17, 1939, include the entire population of the Soviet Union except of the far north, where a census will be taken later this year. The population was 170,467,186 (81,664,981 males and 88,802,205 females), which represents an increase in twelve years of 23,439,271, or 15 9 per cent During the same period the population of all other countries in Europe is estimated to have risen by 32 million, or 8·7 per cent. The urban population of the U.S.S.R has increased by 112 per cent. in these twelve years, being now 32 8 per cent. of the total. The average annual increase of population in the U.S.S.R. has been 1·23 per cent, and recent birth-rates in various large cities are compared as follows:—

	Total births	Average births per 1000 population
Moscow (1938) .	117,200	28·5
Leningrad (1938) ..	83,800	27 4
Kiev (1938) ..	22,500	27 4
Kharkov (1938) ..	22,400	27 7
Baku (1938)	26,900	33 9
Berlin (1936).. ..	59,500	14·1
London (1936) ..	56,300	13 6
Paris (1936)	32,500	11·5
New York (1936) ..	99,400	13 5

The population of Moscow has increased from 2,029,425 in 1926 to 4,137,018 in 1939 (103·9 per cent) and that of Leningrad from 1,690,065 in 1926 to 3,191,304 in 1939 (88 8 per cent.).

ELIZABETH GARRETT ANDERSON

LIVES of great women oft remind us that footprints left in the sands of time are partly dug in by the biographer, or at any rate receive definition from his hand The choice of a biographer is therefore important. No woman, and so far only one man, has inspired a biographer to make a life study of his subject, but in the last few years two women at least have been heroines to their daughters—Marie Curie and Elizabeth Garrett Anderson It is impossible to read the second of these two biographies without thinking of the first, not because they are alike, but because they are so predictably different in subject and treatment. In the exceptional mind of Marie Curie the mathematician worked with the theorist, a leaping imagination was governed by a passion for fact. Her daughter told her story with the same vigour of imagination and the same devoted accuracy, and the book is filled with moving enthusiasm. Elizabeth Garrett Anderson was a great woman of a totally different stamp, a practical politician whose foremost interest was not science but the determination to free women to study science, or anything else they chose She was a first-class doctor because it was her business as a pioneer to be good at her job; she was an excellent committee woman because the liberation of women had to be achieved through the tedium of committee work Her story is told with order, quiet humour and restraint by a daughter who has followed her in the profession which she helped to open to women Dr. Louisa Garrett Anderson's book[1] reads like an extremely interesting report, illustrated with quotations from letters and speeches The early chapters are narrative but later when it is convenient to isolate a series of events they are put in a separate chapter which may cover a period of many years. This treatment helps to disentangle the complex warfare waged by Elizabeth Garrett Anderson in the course of her long life; and has the effect of snapshotting her on her various battlefields One impressive little picture of the kind shows her appealing to the British Medical Association to admit women Her speech was a masterpiece of calm and honourable argument, without one peevish plea in it It was characteristic of the prejudice against which she strove that "one member after another rose and protested that they were charmed and any action they might take would be entirely on the principles involved"; the meeting then voted against her. In Central Europe today women are being forced back into the position from which Elizabeth Garrett Anderson and her contemporaries extricated English women less than fifty years ago This book shows by what labour and patience their status will have to be won back.

INOCULATION AGAINST TUBERCULOSIS

SATISFIED that experiments on rabbits have shown that protection against human tuberculosis can be produced by inoculation with heat killed tubercle bacilli, Opie, Flahiff, and Smith[1] have sought to measure its value to man. Their field of study was the Mental Hospital of Kingston, Jamaica (where the great majority of patients are negroes), to which in 1932–38 were admitted 416 patients who did not react to tuberculin. Taking alternate admissions, half of these were inoculated with heat killed bacilli, and half were left as controls. Both these groups were then given an X-ray examination of the chest within a month of admission, which was repeated, together with tuberculin tests, at intervals of three to four months during their stay in the institution. Persons admitted to the hospital are, it seems evident, freely exposed to tuberculous infection, for rather more than a third of the control group had acquired a tuberculin reaction within three months of admission, and more than half by the end of a year. This exposure may reduce the advantage of the inoculation, if any, for the patients must be at some risk during the period of immunisation and before they have acquired any protection. The results, however, suggest an advantage to the inoculated, for among the 210 inoculated persons there were 23 cases of pulmonary tuberculosis and 16 deaths, whereas among the 206 uninoculated there were 39 cases and 27 deaths. The comparison is not quite straightforward because the patients were passing at different times out of the hospital by discharge and thus continually reducing the numbers exposed to risk, the control group being the more rapidly depleted. The investigators apply a rather rough measure of exposure to risk within each six month interval after admission and find by such means lower attack-rates at each stage among the inoculated The fatality-rate, 69 per cent, was, it may be calculated from the figures above, identical in the two groups; so inoculation had no effect upon the severity of the illness in those who acquired it Opie and his colleagues conclude that under the conditions present in the hospital the protection conferred was greatest during the first eighteen months of residence This observation is in keeping with the fact that a large proportion of the nnoculated patients had by that time become hemselves *protected by spontaneous infection*, s shown by the tuberculin test, but the figures iven in support hardly bear out the contention hey seem to suggest rather that the attack and eath rates of the inoculated were equally favourable is à vis the uninoculated at all stages of observa ion, *and thus that the* intracutaneous administration f heat killed tubercle bacilli was of consistent benefit hat is obviously a highly important observation nd the data seem to deserve rather closer statistical nalysis

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[1] Elizabeth Garrett Anderson By Louisa Garrett Anderson London: Faber and Faber 1939 Pp 338 10s 6d.

[1] Opie, E L, Flahiff, E W, and Smith, H. H., *Amer J.* (Sect B), May, 1939, p 155

NRESTRICTED SALE OF PATENT MEDICINES

IN commenting on the Budget in our issue of pril 29 we pointed out that the proposed abolition f stamp duties will mean that patent medicines are enceforth marketed at every kind of store, and we escribed this discontinuation of licensing as socially nd medically a retrograde step Attention is ow being paid more widely to the possibility of arm from the Chancellor's unnecessary concession o producers of such medicines, and it is stated p 1412) that the protests are receiving official onsideration That the intended change is of ubstantial significance to those concerned is evident rom the speech made by Mr Philip Hill, chairman f Beechams Pills Ltd, at the annual meeting of hat company on June 8, when he announced a rofit of £723,663 on the year's working After escribing the repeal of medicine duties as "probably he most important event which has ever happened n the history of the proprietary medicine and proprietary article business,' he declared that it opened p great possibilities A much wider field of distribution would be available, and the company had already een approached by some of the largest potential istributors in the country, who had previously been prevented from dealing with this type of merchandise "We hope," he added, "that the repeal of the medicine duties will enable us to provide the public with our products in a smaller and cheaper form than has hitherto been possible" Mr Hill at the same time expressed himself in favour of "reasonable control of the formulæ and advertising of proprietary medicines", but if the Chancellor's proposal is realised the increased distribution of patent medicines will antedate, by an indefinite period, any measures that may be taken to safeguard the public from the damage that some of them do Meanwhile that damage will be done on a larger scale than ever

LIBERTY AND LICENCE

THE voluntary hospital principle has had a good press during the past week, the occasion for comment being the annual meeting of King Edward's Hospital Fund for London and the appearance for the ninth year in succession of the Hospitals Year book compiled by the Central Bureau of Hospital Information[1] *The Times* believes that the hospital system of this country is evolving slowly but surely along lines which correspond with the wishes and instincts of the public It remarks that any reformer in this field finds himself face to face with two rigidities—namely, the confidence felt universally in the voluntary principle, and the wish to preserve in the case of each institution not only a tradition but also a place—and it speaks of the crowning achievement of the King's Fund in having been able to effect coördination without doing violence to individuality The Year book contains two essays on these themes One of these deals with the areas of hospital administration *A process of regionalisation is being* worked out on a map of England and Wales, dividing it into fourteen areas "within each of which," in Mr R H P Orde's words, "there shall be as complete a hospital service as to justify the belief that no inhabitant of it need go outside its boundaries (except at his own desire) to find treatment for sickness or accident up to standard recognised as within the competence of a modern general practitioner and a modern qualified consultant" There should, he suggests, be no part of any such division which from a treatment point of view could be regarded as a "distressed" area In many of the proposed divisions there are natural groups of hospitals, voluntary and municipal, which already coöperate It is the task of the provisional council now engaged in implementing the Sankey Commission's recommendations to further the process of crystallisation and bring to light other interests and the advantage of combined action An obvious step would be a bed register for each division on the lines of the emergency bed service now working smoothly in London Every division should provide adequate specialist services but not at more hospitals than local conditions demand It is, as Mr Orde says, a task which cannot be hurried—although time must not be wasted The other essay reveals one unfortunate example of unbridled individuality The value of the Year-book depends on the compilation of figures from all the voluntary hospitals in the country, these figures are as vital to any combined action as are the local registrar's returns to any system of public health Without them no valid conclusions can be drawn And yet there are hospitals which, year by year, fail to supply these figures either in the approved form or within a reasonable period *This year 8 per cent of the hospitals have* failed to supply the figures at all, and the sloth of others has delayed the date of publication for seventeen months from the conclusion of the period to which the figures refer Persuasion has been unavailing, but it should not be beyond the wit of the Hospitals Bureau to devise some method by which the right stimulus should be given to the recalcitrant hospital committees. For after all they are only being asked to play the game, and no voluntary hospital association in this country could be impervious to that appeal.

ANTIHORMONES

SINCE Collip and Anderson[1] demonstrated antithyrotrophic activity in the serum from animals injected repeatedly with thyrotrophic preparations, antihormones to the ketogenic, lactogenic, and gonadotrophic hormones of the anterior pituitary and to the gonadotrophic hormones present in pregnant mare serum and human pregnancy urine have been widely investigated So far none of these hormones has been obtained in a chemically pure form though the evidence points to their being proteins This has inevitably led to the belief that the antihormones were antibodies in the immunological sense, for animals develop antihormones only to hormones prepared from some other species[2] It has been difficult however, to understand the antigenic property of the hormones for they act on all species in the same fashion and must therefore be presumed to have the same composition in all species The situation is now becoming clearer Twombly[3] found that gonadotrophic substances inactivated by heat or ageing retained their antigenic properties and similar observations have been recorded by Brandt and Goldhammer.[4] Dealing with the thyrotrophic hormone, Werner[5] has shown that of two preparations prepared by different chemical procedures from the same glands, yet having equal activity, one may have no antigenic power at all, and Rowlands and Young[6] now report that the capacity of thyrotrophic preparations to produce antisera is independent of their purity. The purer preparation in their experiments, given in equivalent dosage to a less pure sample, produced much less antibody. They even found that a preparation of prolactin with no demonstrable thyrotrophic activity also stimulates production of antithyrotrophic serum. The antigenic capacity is therefore not vested in the activity of the hormone.

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[1] From the bureau 12 Grosvenor Crescent S W 1

[1] Collip J B and Anderson E M, *Lancet* 1934 1, 76

[2] Katzman, P A, Wade N J and Doisy E A, *Proc Soc exp Biol*, N Y 1938 38 12.

[3] Twombly, G H *Endocrinology* 1936 20 311

Rowlands and Young offer a suggestive hypothesis to explain why the antibody acts against the active hormone though the hormone that gave rise to its production is not active. Other workers have shown that immunisation with chemically similar substances diminishes the specificity of the antibodies formed, so that cross-reactions may occur. It is suggested that the power of inactivated hormones to produce antibodies to active hormones is due to some such mechanism. The inactivation may alter the chemical structure very slightly but not enough to alter its antigenic properties. The sample of prolactin which Rowlands and Young used might be presumed to contain some inactivated thyrotrophic hormone. If this is so, it may be that the species specificity of many of the antisera demonstrated by Rowlands[7] may be due to species differences in the inactive residue of the hormone, the active part of which is presumed to be some sort of prosthetic group attached to this larger molecule. Actually such a conception approaches that of Collip,[8] who suggested that all the anterior-pituitary hormones might be regarded as prosthetic groups to two or three large parent molecules.

BLOOD FOR THE SERVICES

The value of blood-transfusion for casualties in the fighting forces was recognised during the late war, and the recent Spanish conflict brought into being several methods for the use of stored blood which met with considerable success. It has therefore been decided to set up an Army blood-transfusion service to provide quantities of stored blood to assist in the treatment of wounded men in any of the fighting services. Because of the extensive scale on which the service is to be created it has been found necessary to establish blood depôts in this country, where civilian volunteers can be bled under proper conditions and the blood transhipped to the places where it is required. For various reasons an area in the West of England has been chosen in which central blood depôts are being set up with a number of sub-depôts or blood-collecting centres in the smaller towns of this region. By means of refrigerator motor-vans blood collected at the sub-depôts will be transported to the main depôts for packing. Each of the main depôts is near an aerodrome, from which it will be possible to send blood by aeroplane to the fighting zones or where military casualties are being treated. The service is being arranged in such a way that it will be responsible for civilian needs in the area where it is operating, thus duplication, but will only supplement the depôts which have been established exceptional circumstances.

After collection in special pint bottles, blood will be cooled rapidly to 4° C., at temperature it can be stored for some weeks. organisation of the main depôts and sub been made possible by the coöperation of voluntary and municipal health services in the Thanks to the enthusiasm with which the been received and the method of adopted, the nucleus of universal donors aimed at securing will be completed course of the next few weeks. The service of expansion, so as to deal with 100,000 donors, from which the group O population selected.

THE BIRTHDAY HONOURS

It is a pleasant duty to congratulate the of our profession whose names appear on p. Whatever may happen in other walks of life, are seldom bestowed on medical men without good reason, and the present list high distinction as well as devoted effort. Dr. Hutchison graduates from one kind another; Sir John Weir is promoted for his attendance on the King; the heads of the services become knights in orders of chivalry, knighthoods are conferred on three medical whose fine work is familiar to nearly all of Briercliffe, Prof. Kelly, and Dr. Drummond and on one who has strayed a little from the Dr. Butler. These represent only the beginning what we may respectfully call a sound sample medical endeavour and achievement. Outside profession itself we are glad to note the for Mr. George Morton, K.C., chairman of the Board of Control for Scotland, and the similar one of The Lancet's contributors, who must as always in these columns, anonymous invaluable In the world of hospitals Mr. Docker, the indefatigable chairman of the minster Hospital, becomes K.B.E., and Mr. Oakes, the generous benefactor of St George's baronet.

Sir Francis Acland's death has followed tragic suddenness his farewell address to the Board. Ample testimony has been received to value of his work as Crown member of the senate London University and as chairman of council of the London School of Medicine for Women. He behind him the memory of a firm and administrator.

"... those men of good will who are with scientific aims and achievements have their own peculiar distress because they know how little is the general good, compared to what could be done. Exposition, therefore, becomes one of our chief It must be mated necessarily with the appropriate education can provide. We desire that men and especially men of good will, and especially men of good education who are the natural leaders be aware of what science is doing and can do.... Scientists are so preoccupied with their business of research, so, and in their researches have gone so far that the has no clear knowledge of the positions that have reached. We have to see to the coupling and take world with us"—Sir William Bragg, F.R.S., May 19, 1939, p. 452.

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[4] Brandt, R., and Goldhammer, H., *Klin. Wschr.* 1938, 17, 236.
[5] Werner, S. C., *Endocrinology*, 1938, 22, 291.
[6] Rowlands, I. W., and Young, F. G., *J. Physiol.* 1939, 95, 410
[7] Rowlands, *Proc. Roy. Soc.* B, 1938, 124, 503.
[8] Collip, see *Lancet*, 1938, 1, 1469

SPECIAL ARTICLES

FEAR*

By E. Mira, M.D. Madrid
FORMERLY PROFESSOR OF PSYCHIATRY IN THE UNIVERSITY OF BARCELONA

It is a property of living matter to be excited by adequate stimuli and to be inactivated by overwhelmingly unfavourable external conditions. The inactivation may be definitive (death) or merely temporary. Animals with a nervous system show it in a general inhibitory process that is known in its *most simple form* as an "*immobility*" or "death" reflex, already observed in asteroidea such as the starfish and described in higher forms of animals by Pavlov. According to Pavlov the fear emotion is nothing but the conscious aspect of this process. "At the basis of normal fear and in particular of pathological fears there lies a predominance of the physiological process of inhibition" (Lectures on Conditioned Reflexes, New York, 1932, p. 368.)

During the late Spanish war we found that the fear emotion—when experienced without any other mixed emotional state—arouses in the individual a feeling of lessening of the Ego, of reduction of his reacting power and of inhibition, and contraction of the Self. In its more violent form, fear makes a person terrified—i.e., converted into *terra* (earth). A terrified subject feels himself as inanimate and motionless as a stone (petrified). But starting from these forms we come to others in which the inhibition is not so general and may even be followed, at certain levels, by a process of excitation. For the evolution of the fear emotion I offer the following scheme:—

Uncontrolled fear			Controlled fear	
TERROR	PANIC	ANXIETY	ALARM	CAUTION
General inhibition Loss of movements and stopping of mental activity with eventual loss of consciousness	'Cortex' inhibition with secondary excitation of mid brain Aimless, automatic movements occasionally of enormous strength	Mixed state conflicting inhibition and excitation at different levels Restricted Jumping Contradictory movements	Concentration and feelings of 'insecurity' and 'mistrust' Slow repeated and superfluous movements sometimes with slight signs of hesitation	Reserve and restraint hypocrisy dissimulation
	(blending with anger or rage)			SUBLIMATION OF FEAR Prudence modesty meticulosity concern

As a general result of my observations I believe that different disturbances can be detected which correspond closely to each of the forms of uncontrolled fear, as follows:—

TERROR	PANIC	ANXIETY	SEQUENCES OF ALL MAY BE
Stupor Catatonic states	Twilight states Impulsive fugues and confused agitation	Hypochondriac states Obsessional (phobic) symptoms Hysterical fits	*Conversion symptoms* especially paretic ones *Neurasthenic symptoms* (exhaustion and increased fatigability, headache, &c.) *Slight retardation*

Conditions that favour such disturbances are: physical inferiority whether due to constitutional weakness or chronic toxic and infectious states; temporary exhaustion from lack of food, sleep, or rest; lack of personal incentives and low "moral tension"; and, last but not least, lack of a definite plan of action. Thus, in order to avoid the effects of fear among soldiers the means employed were: proper medical selection of recruits; careful attention to basic needs, such as food, clothing, and sleep; a scientifically directed effort to keep up individual morale by all available methods (physical training and sports, lectures to explain the meaning of the war); and careful and continuous supply of information about *what to do* in all possible situations related to the war.

The general methods of treatment adopted may be summarised thus:—

(*a*) *Stuporose and catatonic conditions.*—Bed, hot baths followed by massage. Injections of pituitary extracts and cortin. (Injections of cocaine, sodium nucleinate, strychnine and other "exciting" substances should be avoided because they may stir up a state of furious excitement and aggression.)

(*b*) *Tremors, tics and non-epileptic fits.*—Bed, supervised isolation and, according to the results, hypnosis, prolonged narcosis or physical re-education. For hysterical fits in which a selfish purpose (escaping from the military situation) could be detected, compressio testis during the fits.

(*c*) *Paralysis and paresis.*—Electrotherapy combined with suggestion and active mobilisation of the paretic part. If necessary, hypnosis.

(*d*) *Depression and retardation.*—Tonic injections, minor hydro- and mechano-therapeutic measures; rest in the open air; arousal of personal incentives; gradually increasing physical exercise.

(*e*) *Twilight states and severe forms of anxiety.*—Prolonged narcosis by means of injections of phenobarbitone, hyoscine hydrobromide and, if necessary, injections of insulin and digitalin (in order to prevent or to cure vomiting and failing circulation).

Broadly speaking the Spaniards adapted themselves very quickly to war conditions, and there were fewer cases of war neurosis and of fear reactions than might have been expected.

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* Summary of a lecture delivered at the psychological laboratory of the University of Cambridge on May 22.

MEDICINE AND THE LAW

Medical Certificate by Unregistered Practitioner

The Medical Act, as is well known, declares that if a statute requires a certificate to be given by a physician, surgeon or other medical practitioner, the certificate will not be valid unless the person signing is registered under the Medical Act. Although there may not always be a statutory requirement in a particular instance, an unregistered practitioner often finds himself in an awkward position when asked to give a medical certificate. He will be expected to indicate his qualifications and this fact may bring him within the Medical Act by inducing the simulation *of a title or description which he does not possess.* Last week the magistrate at Westminster police-court had before him a summons against Arthur Lund Day of Lower Belgrave Street for using the title of doctor of medicine contrary to the Medical Act, and falsely using the description of medical examiner, thereby implying that he was registered under the act. The proceedings, taken at the instance of the Medical Defence Union, arose from an application for the grant of a pilot's licence for the Civil Air Guard. The Air Ministry's form of application provided for a medical certificate. Mr. Day signed the applicant's form and appended his name as medical examiner He put the letters M D. to indicate his qualifications, adding what the prosecution described as "some peculiar hieroglyphic" There was no doubt that the defendant was not, and never had been, on the Medical Register. For the defence it was claimed that he had gone out of his way to indicate that he was not a registered medical practitioner by putting in brackets the letter "J" after the letters M D. Mr. Day explained that "J" stood for Jefferson College, Chicago; he had no intention to represent himself falsely; he had thought that his examination of the applicant for the pilot's licence was merely preliminary. The magistrate imposed a fine of 20*s*. with £10 10*s*. cost.

SWEDEN

(FROM AN OCCASIONAL CORRESPONDENT)

THE TREATMENT OF PNEUMONIA

THOUGH recent advances in the treatment of pneumonia may greatly improve the prognosis, they have by no means simplified the task of the doctor called on to choose between serotherapy, chemotherapy, neither, or both At a meeting of the Swedish Medical Society last September the complexity of the problem was emphasised, and various solutions were discussed Now Prof Hilding Berglund, of Stockholm, has issued a memorandum on the diagnosis and treatment of pneumonia as adopted at the St. Erik Hospital. This memorandum is not intended to stereotype treatment but to encourage uniformity of procedure, so that really comparable data may shortly be forthcoming from many different hospitals. The pneumonia patient admitted to Prof. Berglund's hospital is promptly subjected to a variety of tests, which include sputum examinations, blood-cultures, type determinations, and radiography. The choice between horse or rabbit serum and M. & B 693 is made as follows In all early cases in which definite typing is possible by Neufeld's method, serum, if it is available, is given, if not, M. & B. 693 is given When there is no available sputum, or the Neufeld method does not immediately assure a type diagnosis, and the patient's condition is satisfactory, treatment is deferred twelve hours or more while the typing tests are continued. If, however, the general condition is unsatisfactory, or if the blood-pressure cannot be maintained above 110 mm. Hg with such remedies as ephedrine, M. & B 693 is given The nauseating effect of this drug can be counteracted by chloretone suppositories In fulminating type III pneumonia very large doses of serum (up to 700,000 units) are to be preferred to M. & B. 693. In general, M & B. 693 medication should never be started before a bacteriological examination of the sputum and a blood-culture have been made.

THE NOTIFICATION OF TUBERCULOSIS

There is a proposal before the Swedish parliament for revision of the law of 1914 with regard to measures for the prevention of spread of tuberculosis Hitherto the public-health authorities have had to dispense with legislative measures giving them a free hand in the matter of notification This is incumbent on doctors only when they find that persons with pulmonary tuberculosis are living under conditions calculated to cause grave risks of infection for those who come in contact with them The new proposals aim at making the notification of all cases of tuberculosis compulsory. It is also proposed that, when patients with infectious tuberculosis are discharged from hospital or sanatorium, notice of such discharge shall be sent to the tuberculosis dispensary in the area to which the patient returns Dispensary doctors will have to keep a register of notifications, and patients known to be infectious will be forbidden to accept employment in dairies or as nursemaids. If these proposals become law, the public health machinery in Sweden, so far as tuberculosis is concerned, will correspond more closely to that in Norway than hitherto.

VACCINATION AGAINST SMALLPOX

It is proposed that the vaccination of children during the first two years of life shall be encouraged, and that, when children reach the school age without having been vaccinated, the school medical officer shall vaccinate them, unless their parents or guardians have formally protested At least fourteen days before the date of the intended vaccination notice thereof shall be read in church, published in the local press, and communicated in writing to the child's custodian.

SICKNESS INSURANCE

With a population of only six million odd, Swed had at the end of 1938 as many as 1,251,627 perso insured against sickness in approved societies. I 1938 alone 130,000 new members joined the societie

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

METABOLISM OF THE HEART

THE third Sharpey Schafer memorial lecture was given in Edinburgh last week by Prof. C A Lovatt Evans, F.R S., of University College, London H began by describing the enormous amount of work which the human heart performs during its life—i.e. sufficient to lift 10 kg. through ten miles—a feat of endurance which is almost unequalled, for the heart weighs only some 300 g. The heart, however, is outstripped by the muscle of the insect's wing in quickness of contraction and speed of recovery. Short films illustrated the operation of the heart-lung preparation and showed the increase in output which results from increasing the inflow, and the rise in work performed when the arterial resistance is raised. The lecturer described the external and the internal methods of measuring the heart's consumption of oxygen. By both methods it has been shown that the efficiency of the heart probably never exceeds 30 per cent and under normal conditions is usually between 5 and 10 per cent.

In the denervated preparation increase in the work done is accompanied by increase in consumption of oxygen and in efficiency, but the increased work induced by increasing the inflow is associated with a greater rise in efficiency than that following increase in arterial pressure. In this preparation the manipulations are not complicated by any change in heart-rate In the heart-lung preparation, however, in which the nerve-supply is maintained, increase in arterial pressure lowers the heart-rate, whereas increase in output raises the rate Gollwitzer-Meier has shown that vagal slowing is followed by a greater degree of reduction in the consumption of oxygen than can be accounted for by the fall in heart-rate alone Similarly adrenaline increases metabolism apart from the rise in rate which it may induce In the innervated heart, indeed, increase in work done is often effected without any increase in consumption of oxygen and therefore with greater economy and efficiency

All isolated hearts eventually fail, and the failure can be shown to be due to inability of the heart to cope with the work demanded of it Such failure is associated with rising pressure in the auricles and with dilatation of all chambers Running parallel with the dilatation there is increased consumption of oxygen and diminished efficiency If the work asked of the failing heart be reduced, the degree of dilatation and the consumption of oxygen are lessened, and the heart becomes more able to carry out its task. If, on the other hand, the load be increased, increased work may be obtained but only at the expense of further dilatation, greater consumption of oxygen, and further lowering of efficiency Indeed the current view is that cardiac insufficiency means reduced mechanical efficiency, with a smaller fraction of the energy consumed being converted into work

Katz and other workers have, however, suggested that in the failing heart there may be a diminished chemical change rather than a lessened output of work, and that the efficiency may not be reduced This work was done with the internal method of measuring the metabolism, the coronary sinus fraction of the coronary blood flow being analysed Fisher has shown that, if both the coronary sinus and the right ventricular (thebesian vein) fractions be collected and analysed, a rising consumption of oxygen and a falling efficiency can be demonstrated when the heart fails

The addition of digitalis to the perfusing blood of the failing heart diminishes the diastolic volume and the consumption of oxygen and increases the efficiency The administration of adrenaline to the denervated heart may increase the work done but at greater expense and lowered efficiency, and long continued adrenaline eventually produces failure and death Gollwitzer Meier, however, has shown that on the heart in situ adrenaline acts by different mechanisms Direct stimulation causes increased rate and consumption of oxygen Nervous control of the rate by increasing the vagal tone reduces the increased metabolism, while the central effect also increases vagal tone and lessens metabolism The total result, according to him, is a reduction in consumption of oxygen and in rate and an increase in work done and in coronary flow, along with improved utilisation of oxygen

Prof Lovatt Evans concluded his lecture with a film illustrating the technique developed by him for the study of the living heart with an artificial aeration chamber instead of the lungs With this preparation it is possible to measure the metabolism of the heart without the complication of the lung metabolism

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IRELAND

(FROM OUR OWN CORRESPONDENTS)

A CENTENARY CELEBRATION

THE annual meeting of the Irish Free State Medical Union, held last week in Dublin, was made the occasion of a celebration of the centenary of the foundation of the Irish Medical Association, one of the constituent bodies which joined to form the present Union at the beginning of 1936 The usual programme of the annual meeting which consists of a scientific session, a business meeting, and a dinner, was extended this year to include a commemorative session, a golf competition, and a medical trades exhibition The meeting was given much publicity in the Irish newspapers, and the *Irish Press* issued a special supplement of 24 pages, including articles on the public aspects of medicine

At the commemorative session on June 8 an address on the history of medical organisation in Ireland from 1839 to 1939 was given by Prof Robert J Rowlette and followed by a description of the position of the medical profession in ancient Ireland by Prof T P C Kirkpatrick, who showed a close parallelism between the principles of the ancient legal codes, in so far as they concerned the medical profession, and those of the Hippocratic oath In many respects the practice of medicine was more efficiently controlled in Ireland at the beginning of the Christian era than at present Prof T G Moorhead spoke on the foundation and recent history of the Medical Union

The business meeting dealt with many items in a short time, owing largely to the capacity of the president, Dr Patrick MacCarvill, as chairman He was elected to a further year of office He recounted in detail the events which compelled the Union to "black list" the army medical service of Ireland because of unsatisfactory pay and pensions An account was also given of a recent conversation between representatives of the Union and the Minister for Local Government and Public Health concerning fees for immunisation against diphtheria and the central council was authorised to continue discussions on the same lines

The annual dinner, held on the same evening at the Shelbourne Hotel, was attended by over a hundred members and their guests The heads of University College, Dublin, and of the two royal colleges were among the guests, as was also Dr Leonard Kidd, who was president of the Irish Medical Association in 1903

On June 9, at the scientific session, a discussion on the developments of modern chemotherapy was introduced by Prof Henry Moore, who was followed by Prof Moorhead, Prof J M O'Donovan, Prof E N MacDermott, and others

A BELFAST HOSPITAL

The new extension of the Hospital for Diseases of the Nervous System, Paralysis, and Epilepsy, Belfast, was opened by the Duchess of Abercorn on May 24 The hospital was founded in 1897 and for the past forty three years has carried on its work in a large double fronted house in Claremont Street About a dozen years ago a convalescent home was established at Killowen, a large house surrounded by open grounds and gardens in the country near Lisburn, co Antrim The old building in Claremont Street was not of course, designed to meet the needs of a modern hospital, and the board felt that it would be difficult, if not impossible, to alter it sufficiently to cope with the requirements of today The opening of the new hospital which adjoins the old, completes the first stage of their plans The intention is when sufficient funds are available to knock down the old building and to substitute modern premises which will then complete the new hospital

The building just opened is designed on modern lines and has two floors On the ground floor is the outpatient department, facing Abercorn Street There is a large reception room for patients, and the dispensary and physiotherapeutic department lead off it The examination room for outpatients is well lighted and affords accommodation for students Dressing-rooms for patients adjoin it On a separate [illegible] rooms have been appointed for the establishment later of an operating theatre and radiographic apparatus, and there is a small clinical laboratory with a mortuary attached. On the second floor two main wards, one for either sex, each accommodating eight patients, are connected with a broad sun-balcony, which overlooks the hospital garden, and on to which the beds may be wheeled in fine weather Off the corridor between the wards are two single rooms and one two-bed room for paying patients and a large day-room for patients able to be out of bed.

The new building was designed by Mr. R. Frater, A.R.I.B.A., *chartered architect, of Belfast,* in conjunction with the honorary visiting staff. The cost has been £13,000, including equipment, and of this £8000 has already been subscribed. The walls, built of rustic brick, are finished in white plaster on the inside. The floors of the wards and outpatient-room are made of wood blocks, and cork-tiling is used in the corridors to deaden sound.

The additional accommodation (the hospital can now take some 30 inpatients) will be a valuable extension of the hospital services of Belfast and an improvement in the teaching facilities already available for students of nervous diseases.

BIRTHDAY HONOURS

THE honours list issued on June 8 contains the names of the following members of the medical profession :—

Baronet

Robert Hutchison, M.D , D Sc., LL.D.
President of the Royal College of Physicians; consulting physician to the London Hospital

G.C.V.O.

Sir John Weir, K.C.V O., M B.
Physician to H M. the King, senior physician to the London Homœopathic Hospital.

K.C.B.

Lieut -General William Porter MacArthur, C.B.E., D.S.O., O.B E., F.R.C P., K H.P
Director-general of Army Medical Services

Surgeon Vice-Admiral Percival Thomas Nicholls, C B., M.R.C.S., K.H.P.
Medical director-general of the Navy.

K.B.E.

Air Vice-Marshal Albert Victor John Richardson, C.B , O.B.E , M.B , K.H S
Director of medical services, Air Ministry.

Knights Bachelor

Rupert Briercliffe, C M.G., O B E., M D.
Director of medical services, Nigeria

Edwin John Butler, C M G , C.I E , M B , F.R S
Secretary to the Agricultural Research Council.

Robert Ernest Kelly, C B , F R.C S.
Professor of surgery in the University of Liverpool.

Thomas Drummond Shiels, M C , M B.
Medical secretary, British Social Hygiene Council.

C.B. (Military)

Major-General H H A. Emerson, D.S O., M B.
Late director of hygiene, the War Office.

Major-General I. M. Macrae, C.I.E., O.B.E , M.B , K.H.P.
D.D.M S , Eastern Command, India.

C.M.G.

Ralph Roylance Scott, M.C., M B
Director of medical services, Tanganyika Territory.

Christopher James Wilson, M C., M D.
Of Naivasha, Kenya Colony.

C.I.E.

Lieut -Colonel F. J Anderson, M C , F.R C S , I.M.S.
Professor of surgery, Medical College, Calcutta.

Lieut -Colonel R. F. D. MacGregor, M.C , M.B , I.M.S.
Residency surgeon, Hyderabad, Deccan.

C.B.E. (Military)

Colonel E. M Cowell, D.S O., T D., F.R.C S
A.D.M.S., 44th Division, T.A.

Surgeon Captain Leonard Darby, M.B.
Senior naval medical officer, Sydney

Colonel Roger Errington, M C., T.D., M.D
A D M S , 50th Division, T.A.

Brevet Colonel Alexander Hood, M D.
Deputy director of medical services, British Forces in Palestine and Trans-Jordan

C.B.E. (Civil)

Arthur Marcellus De Silva, F R C.S.
Senior surgeon, General Hospital, Colombo

O.B.E. (Civil)

Major Bijeta Chaudhuri, F.R C S , I.M.S.
Senior medical officer, Port Blair.

Kenneth Hutchinson Digby, F.R.C S
Professor of surgery, University of Hong-Kong

George Alexander Clarence Douglas, M S.
Orthopædic surgeon to Brisbane Hospital, Australia.

Hugh Arrowsmith Grierson, M.C., M.B.
Senior medical officer, H.M. Prison, Brixton

Alexander Sydney Joske, M.D.
President of the medical board, Victoria

Henry Richard Rishworth, F.R.C.S
P.M O., Great Indian Peninsula Railway.

Reginald Hunt Tootill, M B.
Of Urmston, near Manchester.

Donald Percy Wailling, M.R.C S
Commissioner and med. officer, British Virgin Islands

Ernest Watt, M.D., D.Sc , D P.H
Medical officer, Department of Health for Scotland.

Montague Harold Way, M R C S., J.P
Med. officer, St John Ambulance Assn., Portsmouth

M.B.E. (Military)

Lieutenant E. A. Cotton, D C M., I.M D.

Major Donald Ross, T.D , M B., J P.
Med. supt , Argyll and Bute Dist. Mental Hospital.

Captain Walter Stewart, M.B , R.A M C.

M.B.E. (Civil)

Rai Bahadur Rabindra Nath Banerji, M.B.
Medical practitioner, Allahabad.

Alan Leslie Greenway, M R C S , I M D
Medical officer, Kuwait, Persian Gulf

Radha Krishna, M.B , D.P H.
Med. supt , Silver Jubilee Tuberculosis Hosp., Delhi.

Úna Frances Marie Morton, M D.
Principal, Women's Medical School, Agra.

Kaisar-I-Hind Medal

Grace Stapleton, M D , F.R.C O.G.
Professor of obstetrics and gynæcology, Lady Hardinge Medical College, Delhi.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM PETER QUINCE

III

Now for a change let us put ourselves under the microscope.

The whole business has turned out very differently from what we expected, and it is only reasonable to try to remember why on earth we ever became doctors? Personally I can recall three attractions: (*a*) the moral certainty of owning a motor car, (*b*) the urge to score off an elder brother who was in "business", and (*c*) *the vague desire to be a* "useful" member of the community. Of course at that age one did not regard tradesmen, mechanics and other business folk as being Useful Members of Society. They existed to make money for their own pockets. A doctor was—well—different: he was inspired by the Highest Ideals and all that.

Now what about those deep unconscious urges which may or may not have activated our motives, and which our choice has undoubtedly *satisfied to* a greater or less extent? Supposing, for the moment, we play the Psychology Game. Disregarding the possibility that we may love our fellow men, or that the behaviour of living organisms *may be of absorbing* interest to us, let us assess all our Lowest Possible Motives and face them with a happy smile. Applying first to the Freudian school—the Senior Service—we are content to believe that it didn't get much of a look in. Any half acknowledged tendency to voyeurism in premedical days was satisfied—and shall we say sublimated?—long before *one reached the* Conjoint exam. Not entirely perhaps. No matter how familiar we may be with the female extremities, most of us like to have a look to make sure. Hence our steady attendance at those refresher courses in anatomy organised by Mr C. B. Cochran.

Adler—or Jung—comes next? I forget. The Will to Power and the desire for Affection are both offered easy fulfilment by the practice of medicine, and it is difficult to determine which is the stronger, except by searching self questioning! "I" versus "Me" or "Heads" versus "Tails".

Heads: Which causes me the greater pain or anger?—the patient who, though extremely fond of me, wilfully disregards my advice, or one who follows my instructions meticulously even though he obviously detests me?

Tails: Well, I can say at once that the patient who both dislikes and *disobeys me* causes far less heartache than either of the others. He's a nasty piece of work and he can stew in his own juice.

Heads: Quite so. In other words he has no status in my little world, so we shut him out? The only world that is acceptable to us comprises patients who like us and those who trust us sufficiently to put themselves in our power?

Tails: I suppose so, but of the two low motives I rather think my *favourite* is the will to power. It works most beneficially, you know, for if we find a section of suffering humanity *putting its trust in us*, we in all humility realise our inadequacies and strive to lessen them.

Heads: Yeah? In order that this happy state of affairs shall be maintained on a securer basis?

Tails: Keeping up appearances is as low a motive as you could possibly want—and surely it works out well if it means building well and truly behind our façades.

* * *

Why is the façade so necessary? We speak rather slightingly of a physician or surgeon as a "good *showman*" and yet there is an element of envy in our censure, for we are all tarred with the same brush. If, as according to Miss Joyce Dennys, all our wives wear false noses, how much more truly do we all wear false faces. We simulate an interest and a confidence we are often far from feeling, and we dissemble our encyclopædic ignorance. Because if we didn't our medicines wouldn't work—and that's that. We are the second greatest histrionic profession in the world, with the Bar a close runner up. "It isn't what he says but how he says it," applies just as much to Sir John Upper Gum Tree as it does *to Ronald Squire*.

In a way I think it is unfortunate that we are such a healthy crowd and forget what it is like to be ill. When I am ill I like the colleague who attends me to admit that he doesn't know for certain what is the matter, but that he has seen one or two exactly similar cases, that there is no prospect of death, disfigurement or chronicity, but on the contrary every prospect of regaining perfect health within a specified time.

While my colleague is on my job I can shut my eyes to the fact that I can swim faster than he can and have read more Elizabethan dramatists, and I invest him with all sorts of god like powers. He makes his entry as if visiting me were the one eagerly anticipated event in his day. Although in a healthier moment I should realise that he can learn precious little from that stethoscope which travels so rapidly over my chest, and that his intent searching expression doesn't mean a thing—I wear one myself when examining patients—all the same my heart beats quicker as he examines me. How pleased I am if he notices me not only as a patient but as a person! He listens interestedly while I air what must be to this Super Man the most childlike views on art, literature and life. While drying his hands he appraises—nay covets—my small Arnesby Brown panel. I resist a wild impulse to ring for paper and string so that he may take it with him—simply because it would be too embarrassing for him. Instead I resolve to send it round with a nice little note when I am finally out of his hands. (Don't worry. I shall have come to my senses by then.) He rises and crosses to the door on a good laugh line, pauses hand on knob and says—regretfully it seems to me—that there will be no occasion for him to see me for a couple of days, and that I'm doing well. My delight that I please him, both as a patient and as a fellow man, knows no bounds, and when he is gone I recapitulate all he has said and the way he said it—and his silences—and read all sorts of subtleties into them. I am in fact the Perfect Audience. Surely it is his duty to play up to me?

Now I come to think of it, it doesn't always work out like that. When I was a medical student a sudden patch of analgesia over one of my peroneal nerves told me I had incipient disseminated sclerosis. After I had borne this as long as I could in silence I started bothering Harley Street. Harley Street was ever so kind, examining me carefully, reassuring me and sending me away completely comforted until I reached Great Portland Street, when I knew that kind-hearted Harley Street was lying purposefully.... "Poor devil," it was saying even now, "he's done for, but it develops so slowly and with such amazing remissions that he may as well live in a fool's paradise for as long as he can. . . . A rotten ending. . . Quite a decent chap." (There was at this time quite a lull in cures for disseminated sclerosis) I soon detected a kinder and more considerate attitude towards me on the part of all my hospital chiefs. They Knew. In fantasy I died beautifully many times, sometimes saying "Tell Alison I loved her," and sometimes keeping bravely quiet about all that business.... I was ploughed in the Conjoint medicine. One of the questions was about disseminated sclerosis and it spoilt my afternoon: I knew so much about it that I didn't know where to begin.

Eventually I cured myself by taking out an insurance policy against sickness My paranoia did not extend to insurance company physicians There would be no false sentiment about them This time I emerged from the consulting-room completely cured

On looking back I see that some pretty obvious psychological mechanism forced me at that time to take refuge in a phobia, and if it hadn't been disseminated sclerosis it would have been something else equally incurable Indeed I remember that one evening it was touch and go whether it wasn't really subacute combined degeneration, and on another occasion (in the very early hours) it was a nasty touch of uræmia.

As a result of this experience I was able to "cure" several medical students suffering from phobias who came to me when I was a house-physician—without any psycho-analysis, and, sadder still, without any rake-off from the insurance companies.

* * *

To return to our façades: Where does the extension of one's personality cease to be legitimate? Dr Watson's bowler-hat and homespun tweeds were as much an expression of the man as Holmes's dressing-gown and fiddle. He wore them because he felt dimly that they were fitting and perhaps because his wife liked him in them. He was quite unconscious of any impression he might be creating. I venture to say that quite a number of us are not so innocently unaware of our public for whom we play a rôle which we hope will meet with their applause For make-up we employ severally monocles, side-whiskers, butlers, chauffeurs, high-speed cars, knowledgeability about wines politics music and books, a didactic manner with colleagues—or even the more subtle negative mufti of patched jackets and shapeless flannels: "I am the sort of man who doesn't [need to] bother about appearances, I am"

Extroversion is by no means confined to members of the medical profession, but the regularity with which they find themselves placed up-stage-centre gives them peculiar opportunities to develop it which are denied to citizens in humbler vocations In all walks of life interests are apt to be pursued with one eye on an audience Art galleries are trudged round and concerts sat through not for the immediate personal enjoyment so much as for the later satisfaction of Being Able to Talk About It The various book societies (unwittingly perhaps) have fostered this bogus-reading habit. At dinner parties one finds that one's neighbours, having all browsed in the same pastures, are all braying in the same key.

And after all what does it matter?—so long as we don't lose sight of our real selves behind our masks and don't confuse ourselves with the parts we are playing: in other words, so long as we remain humbugs and don't become hypocrites? A man with natural gifts of voice and personality is a fool not to exploit them if they enable him to do his job better. It is only when his inner self bows down and worships his Conception of his Rôle, and he can no longer laugh with those who rag him about it, that he has lost his soul.

Ask any actor.

BICENTENARY OF QUEEN CHARLOTTE'S

THE bicentenary festival dinner of Queen Charlotte's Maternity Hospital, London, was held at the Savoy Hotel on June 7 when about 200 guests were present. The DUKE OF KENT, who presided, said that Queen Charlotte's was the first hospital to admit the unmarried woman with her first child, and was foremost in making provision for the confinement of mothers in their own homes. In point of fact it was founded not by Queen Charlotte but by a famous obstetrician, Sir Richard Manningham, who engaged a building next to his own house in Jermyn Street in 1739, five years before the Queen's birth; it is therefore the oldest maternity hospital in the Empire, and from the beginning has depended upon voluntary contributions. In 1809 the Duke of Sussex became its president and chairman of the committee, and his mother, Queen Charlotte, and his brothers gave their patronage: the Duke of Cambridge succeeded him in the presidency. The hospital was rebuilt in 1856 and extended in the following year to what now constitutes the old building in Marylebone Road: the present structure on the five acre site at Hammersmith was begun in 1929. Since its foundation the hospital has confined over 275,000 mothers while its medical school has trained over 15,000 students and midwives; at present there are 150 nurses and 6 medical officers in residence, and the hospital has 27 consulting specialists—figures which will increase when the new buildings are occupied.

Mr. EARDLEY HOLLAND said that the hospital annually cares for over 4000 women during pregnancy and confinement, and is a training and research centre which serves as a model for other institutions: as many as a quarter of its resident medical officers have become obstetric specialists so that Queen Charlotte's may rightly be called "the staff college for obstetricians." In the new buildings a mother would hear the song of the blackbird instead of the roar of a motor-bus and she would see not bricks and mortar but trees. With 200 beds it will be the largest maternity hospital in the Empire, and is designed for the maximum of safety; the wards will be small with not more than six beds, each curtained off (very ill people will have single rooms) and all beds will be fitted with individual light, bell, wireless plug, and power point. He emphasised the fact that pay-beds will be provided for patients with moderate means. The isolation block and research department were built on the new site in 1930, and as a measure of their importance he referred to the decline in the mortality-rate due to hæmolytic streptococcal infection at the isolation block, from 20 per cent. during 1931–35 to 5 per cent. in 1936—after the introduction of sulphonamides. Associated with this was a fall in national maternal mortality-rate per 1000 births from 4 in 1934 to 3 1 in 1937, and 2 9 in 1938, the lowest figure ever recorded in this country.

Sir WILLIAM JOWITT paid tribute to the nursing staff, saying that out of the total cost of about £500,000 a sum of £170,000 is still needed, half of which is for the nurses' home. He stated that for £1000 a mother's bed may be endowed in perpetuity; for half this sum a nurse's bed or baby's cot can be endowed, or four nurses can be trained.

Nurses from Queen Charlotte's then collected donations, which totalled £6125.

LETTERS TO THE EDITOR

SULPHANILAMIDE IN TYPHOID FEVER

SIR,—In your last issue Dr Harries and his lleagues describe the treatment of seven cases of phoid fever with the sulphonamides—sulphanil mide and M & B 693 Although they are cautious making claims for this treatment, the impression be gained from their article is that sulphonamides ould be used in similar cases Thus they state at sulphanilamide can exercise a bacteriostatic fect on *B typhosus* in the blood stream, though om the next sentence it seems that the reference is tually to M & B 693 (which is not sulphanilamide)

I have seen two patients with typhoid fever who ad been treated, the one with sulphanilamide, the ther with M & B 693, before the establishment of e diagnosis

The first was a man aged 73 years whose symptoms arted on Dec 28, 1928 He was given sulphanil- mide, 3 grammes daily, from Jan. 8 to 16 The mperature throughout this period varied from 1° to 103° F, and the general condition including e development of nocturnal delirium, was exactly at which would be expected at this stage of the sease I advised withdrawal of the drug The ver lasted for five weeks and recovery followed

A more striking instance of the uselessness of lphonamides for typhoid fever was presented by a male aged 43, whose first symptoms arose on ec 8, 1938 She was given M & B 693 in 1-gramme oses five times daily from Dec 11 to [illegible] inclusive or the first twenty four hours of this treatment the mperature fell from 103° to 99, and then it rose a daily swing of 101° to 104° Blood taken on ec 20 and 23, when she was saturated with & B 693, and was deeply cyanosed as a result, ave positive cultures of typhoid bacilli The illness as a severe one, the pyrexia lasting for seven eeks.

Here then are two instances in which sulphonamide eatment, even in large doses, was powerless to fluence the course of typhoid fever In view of the reat natural variations in the manifestations of the sease, I question whether a case has been made ut for the employment of drugs which are by no eans devoid of danger

I am, Sir, yours faithfully,

Harley Street, W 1, June 12 A H DOUTHWAITE

THE APPENDIX MASS

SIR,—Mr McNeill Love in his article on the ppendix mass in your issue of *June 3* raised the erennial but extremely important question of eatment

In my own opinion the "mass" due to an inflamed etrocæcal appendix is the only one which can be eated expectantly with any safety It is due to e induration of the cæcal wall, and the appendix is a rule well "shut off" from the general peritoneal vity This is the commonest position in which to nd the appendix at the subsequent interval opera ion Where the appendix is not in this position the "mass" is formed by adherent omentum and coils f small bowel, and is lying in the general peritoneal avity or in the pelvis. In these cases I believe great sk is incurred in adopting expectant treatment he main difficulty is the correct diagnosis of the rigin of the "mass," and if this is appendiceal, of he position of the appendix The latter may be nown from a previous barium meal or enema xamination The character of the symptoms and igns, which I have discussed fully elsewhere, may suggest a retrocæcal position When a patient is first seen after the third day of the attack and has a palpable "mass" in the right iliac fossa, and the evidence is in favour of retrocæcal appendicitis, but without signs of suppuration, then expectant treatment rather than immediate operation is advisable, except in children

If the appendix perforates, a retrocæcal abscess forms which, as a rule, readily localises, but spread to the subphrenic region is possible and a perforation near the base of the appendix may result in immediate general peritonitis If the evidence points to the presence of or the development of a localised retro cæcal abscess (leucocytosis, true rigidity in the loin, palpable "mass" in the right iliac fossa), then opera tion is generally indicated, but great care is necessary in estimating the optimum time for interference, especially in middle aged and elderly patients These are often surprisingly well, especially if not seen until 7–10 days after the onset of the attack, yet simple drainage of their abscess may end fatally owing to such complications as secondary hæmorrhage, paralytic ileus and portal pyæmia

Although the appendix is undoubtedly the commonest source of a "mass" in the right iliac fossa, yet occasionally errors in diagnosis are made Apart from the difficulty of subsequent explanation to the friends and relatives, the prognosis may be affected adversely by the delay I have found the following conditions, admittedly rare, simulating an appendix mass (1) inflamed Meckel's diverticulum, (2) inflamed solitary diverticulum of the cæcum, (3) tuberculoma of the ileum, (4) tuberculous hyperplastic cæcal tumour; (5) abscess of external iliac *lymphatic glands*

I am, Sir, yours faithfully,

Harley Street, W 1, June 12 CAMERON MACLEOD

THE PROBLEM OF MEDICAL LITERATURE

SIR,—No one can deny that the present state of medical literature is simply chaotic, nor is there any prospect of improvement The general problem is nobody's business and so it drags on with the result that thousands of pounds are wasted and there is much delay in bringing the fruits of research to the public benefit

Take the position of the average doctor who has an idea and wants to find out what has been done on the subject already If he has been able to afford five guineas he writes to the Royal Society of Medicine and asks the question The non medical librarians of this excellent institution consult the Cumulative Index and the Surgeon General's Catalogue, both American publications, and in due course a list of possibly some hundreds of references arrives They are in all manner of languages, some are relevant, many are not He next tries to find where the journals are and he will, if he is lucky enough to locate them at all, find they are scattered all over the libraries of Britain, some are already on loan, some are in libraries which do not lend He will discover that many libraries take in the same journals and that most have had to restrict their intake to what they can afford They continue the old classics because they do not wish to spoil their existing sets Having obtained a journal—which journal may be in Hungarian—he has to find a translator and having had it translated he may find that the paper is not relevant after all And so he goes on until any enthusiasm he has had becomes melted Too often the list of references is appended unread and so the mountain of unnecessary literature grows.

Surely the time has come when there ought to be a greater measure of coördination amongst libraries to make the lesser-known journals more readily accessible. In London alone there are no fewer than fourteen general medical libraries, all belonging to different bodies who are jealous of their own possessions. It is difficult in the circumstances to see what might be done, but two lines are evident and these may be stated quite shortly. It is most desirable that medicine, like chemistry and physiology, should have an adequate abstracting journal Nor is that enough. Every few years there ought to be systematic reviews in all subjects, somewhat on the lines of Allbutt's "System of Medicine" and adequately supplied with references to the original papers

It may be asked who is to pay. From the publisher's point of view it is, as recent publications have shown, a paying proposition. I believe writers would be forthcoming if there was a provision of adequate clerical assistance, and the expense would be negligible compared with what would be saved in preventing undue repetition of investigations. Research workers are apt to reply to this that they know all the new work. This may or may not be true in special instances: publications in the best medical journals, by men of eminence and others, show that generally it is not. It would be easy (but invidious) to give examples. The difficulties are great for the experienced workers; what chance then have the younger men who, full of promise and enthusiasm, find themselves up against a system which belongs to a bygone age when communications were difficult and journals few? It is on them that the future of medicine really depends Why should they be allowed to waste their precious hours and often public money doing work which would be unnecessary but for sheer lack of coördination amongst the medical bodies concerned?

I am, Sir, yours faithfully,
R. J. S. McDowall.

Department of Physiology, King's College,
London, June 12.

THE ORIGIN OF FIBROIDS

Sir,—I was much interested in the paper by Prof. Lipschutz and Dr. Vargas in your last issue, and also in your leading article The production of uterine fibromyomata by means of repeated injections of follicular hormone is a most suggestive finding, and is comparable to the work of Laccasagne and Burrows.

Lipschütz and Vargas say that "it seems very probable that the uterine fibromyomas in women are a local sign of an endocrine disturbance" I think there is abundant clinical evidence to support this statement, apart from their animal experiments. As is pointed out in your leader these tumours rarely appear before the menarche or after the menopause, and they usually regress after the menopause, whether natural, surgical, or the result of radiation. Among other relevant characteristics I may mention the disproportionate increase in size of fibroids during pregnancy, and their rapid involution in the puerperium. This corresponds with the great increase of follicular hormone during pregnancy and its decrease in the puerperium. Again, when operating for fibroids, one often finds follicular cysts in the ovaries. Further, fibroids are commoner in unmarried women, and I think also in married women who are voluntarily sterile: in both these types the incidence of ovarian dysfunction is higher than in parous women. Yet another point is the common association of fibroids with endometriosis.

I suggest that we have here abundant clinical evidence of hormonal disturbance. It will be interesting to note whether fibroids develop in any patient receiving large doses of follicular hormone. The possibility that fibroids may ultimately become amenable to hormone therapy is a fascinating one, and it would be interesting to test this possibility in a case of impacted fibroid associated with retention of urine, for it should be possible here to obtain objective evidence of a decrease in size when the next menstrual period occurred.

I am, Sir, yours faithfully,

Manchester, June 11. T. F. Todd.

PROPHYLAXIS OF WHOOPING-COUGH

Sir,—In an annotation on April 8 (p. 835) you stated that "it is generally agreed that if a vaccine prepared from *H. pertussis* is to have any prospect of success freshly isolated smooth (*phase I*) strains must be used" and that "a total of at least 80 million organisms must be injected." This is undoubtedly the current opinion. But, while the admirable field experiments of American workers, Sauer and Kendrick in particular, have established the efficacy of such vaccines, it does not necessarily follow that the success of the vaccine is dependent *on the use of freshly isolated* phase I strains, since the use of high doses accompanied the introduction of such vaccines

We are not aware of any conclusive tests in children in which vaccines prepared *from old laboratory* strains, still in phase I, or from rough strains (phase III) have been directly compared in the same doses with vaccines prepared from freshly isolated strains. The cautious conclusion of Leslie and Gardner,[1] to whose study of the agglutinative phase of *H. pertussis* a great part of the revival of interest in the prophylaxis of pertussis must be credited, was that "the general results of our immunity experiments are therefore irregular and further work is clearly needed. But the evidence so far obtained, coupled with the serological findings, indicates that *for prophylactic* vaccination of the human subject, phase I vaccines made from freshly isolated strains are more promising than those made from old cultures" Leslie and Gardner's evidence is now less convincing, because they showed that the death of guineapigs, the animals employed in their experiments, was solely toxic, and Evans and Maitland[2] have since failed to find any evidence of antigenicity of pertussis toxin, a finding we can confirm.

These objections are not merely captious It is not always possible to obtain fresh strains of *H. pertussis* in interepidemic periods in Australia. Burnet and Timmins[3] demonstrated the high susceptibility of the mouse to experimental infection by the intranasal route and suggested the use of this method in the investigation of the efficacy of various types of vaccines Following this lead, we have been able to show that the sera of certain adult contacts, and of some patients convalescent from whooping-cough, can passively protect mice against death or infection with lethal doses of *H. pertussis* Similar protective properties are demonstrable, but in a lesser degree, in the sera of children immunised by Sauer's method but not in the pooled sera of healthy adults

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1 Leslie, P H, and Gardner, A D, *J Hyg, Camb* 193
31, 423
2 Evans, D G and Maitland, D B, *J Path Bact* 193
3 Burnet, F M, and Timmins, C, *Brit J. exp Path*
18, 83

control unimmunised children Strains maintained at these laboratories for three years retain full virulence for the mouse and remain in phase I Presumably these strains should provide as efficient antigens as fresh strains, though we have not yet tested the sera of children immunised with such vaccines, or with vaccines prepared with rough avirulent strains Tests of rabbit sera indicate that, in that animal, rough strains may be as efficient as smooth strains in stimulating the appearance of protective antibody Full details of the work on which these statements are based will be published shortly in the *Australian Journal of Experimental Biology*

Naturally, these findings do not affect your conclusion that, until more information is available, vaccines for prophylactic immunisation should be prepared by methods proved to be efficient

We are, Sir, yours faithfully,
ESMOND V KEOGH,
EDGAR A NORTH

Commonwealth Serum Laboratories, Melbourne May 19

THE PRACTITIONER AS SCIENTIST

SIR,—It might be well to recall in reference to Lord Stamp's address, published in your last issue, a remark of the late Sir James Goodhart, sometime physician to Guy's Hospital In speaking of new remedies, his advice was "Go on using it, my boy, while it is still curing"

I am, Sir, yours faithfully,
A W SHEEN

Cardiff, June 9

CLOSED TREATMENT OF COMPOUND FRACTURES

SIR,—I have read with interest the letter of Dr J Trueta Raspall in your issue of April 8, in which he replies to the criticisms of Colonel E M Cowell and Colonel P H Mitchiner on the closed treatment of compound fractures due to war wounds My experience here in Shanghai, during the Sino Japanese hostilities in the late autumn of 1937, tends to confirm all that Dr Trueta claims for the method, this in spite of the fact that the wounded had often been lying out on the battlefield for two or three days before admission to hospital and on arrival already had heavily infected wounds I must admit, however, that gas gangrene and tetanus were very uncommon, owing no doubt to the fact that human manure and not horse or cow manure is used by the Chinese farmer Had these infections been common, I should have been reluctant to use the closed method

I agree with Dr Trueta that a wide excision of all damaged tissue is essential, and that a wide and open gutter type of wound should be made so that the path of least resistance for the discharges is towards the surface and not up the intermuscular planes The method is most effective in the distal parts of the limb, where immobilisation by plaster is absolute, the slightest muscular movement tending to encourage the spread of infection Most of the wounds treated were shell and bomb wounds with large areas of destroyed soft tissue, excision of these wounds usually left the desired type of wide open cavity for closed plaster treatment

I have had little experience of through-and through rifle wounds, and the experience I have had has been in civil practice, with patients who have had a daily bath and clean underclothing and have been admitted to hospital within an hour of receipt of their wounds, and, although there have been successful results, I feel sure that this has been due to the above conditions, which made deep infection improbable and are not to be hoped for in the case of a soldier on active service In these cases the principle of a wide open wound for drainage purposes cannot always be applied without sacrificing healthy structures, the second principle, however, of absolute immobilisation is still essential and is best attained by a split plaster case, which allows for swelling of the limb and inspection if necessary

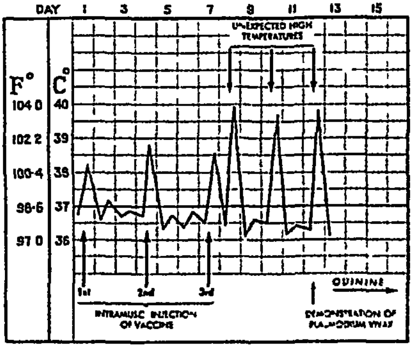
I am, Sir, yours faithfully,
A D WALL

Shanghai, May 15

ACTIVATION OF MALARIA BY VACCINES

SIR,—In THE LANCET of June 3, p 1262, I read with great interest the observation of Drs Murgatroyd, Findlay, and MacCallum concerning a long latent infection with *Plasmodium ovale* becoming manifest after yellow fever vaccination In 1926 I made a similar observation after the administration of another sort of vaccine

Having diagnosed ulcerative colitis in a woman of about 30, I prescribed an autogenous vaccine The injections were administered by Dr M Hetényi twice a week, and the first two were followed by shivering, and sometimes rigors, with fever 100–102° F Pyrexia appeared four to six hours after the intramuscular injections On the day after the third injection chill and fever reappeared and were more intense than previously At first the possibility of a local infection at the site of the intramuscular injection was considered, but no acute inflammation or infiltration was detected Fortunately the temperature of 104° F lasted only a few hours and then subsided, with copious perspiration Two days later, however, rigor and high temperature returned without any intervening injection of vaccine (see the accompanying chart) The patient gave no history of malaria Blood films, prepared during a third attack of fever, revealed the presence of the parasites of tertian malaria and the patient was cured by the regular administration of quinine



I think that there is no doubt about the activation of latent malaria by injections of vaccine The above case is of special interest because the patient not only gave no history of previous malarial infection but also denied ever having been in a tropical or a sub tropical country Her husband, however, had been infected with malaria in Albania in 1918, and finally cured in 1923 It is impossible to find out whether, and if so when, the husband's malaria was transmitted by an anopheles to the patient, in whom no symptom of malaria was observed, the infection remaining latent.

During the Great War we saw many patients suspected of malaria, and in some cases of latent malaria the correct diagnosis was made by examining the blood during an attack of fever artificially produced by injecting protein.

I am, Sir, yours faithfully,
EUGENE ROSENTHAL,
Lecturer in the Royal University of Budapest
Budapest, June 7

CHEMOTHERAPY AND THE EYE

SIR,—In view of the use of 2-sulphanilyl-aminopyridine (M. & B. 693) in chemotherapy and its possible application in ophthalmology it may be interesting to record that it is excreted in the tears. J. G. Bellows and H. Chinn (*J. Amer. med. Ass.* May 20, 1939, p. 2023) have observed that, after oral administration, sulphanilamide penetrates into the eye; the concentration in the chorioretinal layer approached that found in the blood. After giving M. & B. 693 to several subjects in a dosage of 0·02–0·05 g. per kg. of body-weight I was able to detect the drug in the tears, as free amino body, after four hours (when the concentration in the blood is usually at a maximum) in a concentration of 3·5–7·2 mg. per 100 c.cm. These concentrations were similar to those found in the blood.

I am, Sir, yours faithfully,
R. WIEN.
Pharmacological Laboratory, 17, Bloomsbury Square, W.C.1, June 9

PUBLIC HEALTH

A Minority Programme

THE Medical Practitioners' Union, meeting at Blackpool last weekend, adopted a nine-point programme for the improvement of the general medical services of the nation. An introductory memorandum emphasises the danger of reforms being made at short notice by political parties, and recognises that "in accordance with the normal mode of law-making in this country, the next extension of medical service is almost certain to be designed to appeal to as many voters as possible, with as little disturbance of existing interests as can be managed." In putting forward its own plans the union refers to the legitimate claim of the profession to be properly paid, but frankly declares that the amount and method of remuneration of practitioners are professional problems which cannot possibly affect the decision as to what steps can best be taken towards a complete health service for the nation. Its own recommendations are based on extension of the general-practitioner service to everybody; this it thinks much more important than the provision of extra specialist and institutional services, which can already be provided by county and borough councils. The first step should be to extend the benefits of the panel system—and *only* those benefits—to the whole population, without distinction of wealth. (If this entailed hardship for doctors practising chiefly among the well-to-do this hardship would have to be remedied.) The union would abolish insurance contributions and make medical benefit a direct charge on the state; but except in thinly populated areas it would continue the payment of practitioners on a capitation basis. Though, like all treatment services, the general practitioner's work would eventually come under the control of the Ministry of Health, operating through local committees analogous to the insurance committees and panel committees of today, it would *not* be controlled by the municipal medical officer of health, the opportunities and education of that officer do not fit him to supervise treatment services, and his political position and relations with his council make it hard for him to do even his existing work efficiently.

The union also demands that the poor-law taint should be removed from all forms of medical treatment, criticises the existing maternity services because they disconnect the practitioner from obstetrics, and seeks changes in the General Medical Council and medical education. It reiterates its view that there is little value in wrangles about ideal systems when all energies need to be concentrated on improvement of existing services. Lord Horder, who addressed the conference on Saturday, congratulated the union on the practical nature of its policy, and remarked on the regrettable tendency to regard medical and social improvements as planks for politicians. He deplored the retreat of the family doctor before the advance of the bureau, and on the larger question of national health said that to preach health to people living below the poverty line is gross hypocrisy.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 3, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1427; diphtheria, 717; enteric fever, 25 (32 "expected"); pneumonia (primary or influenzal), 728; *puerperal pyrexia*, 195; cerebrospinal fever, 31; acute poliomyelitis, 13; encephalitis lethargica, 5; relapsing fever, 2 (Preston, Crosby); dysentery, 31; ophthalmia neonatorum, 99. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 9 was 2954, which included: Scarlet fever, 648; diphtheria, 539 (carriers, 26); measles, 1; whooping-cough, 941; puerperal fever, 18 mothers (plus [illegible] babies); encephalitis lethargica, 304; poliomyelitis, 3. At St. Margaret's Hospital there were 21 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 3 (0) from measles, 1 (0) from scarlet fever, 18 (4) from whooping-cough, 10 (1) from diphtheria, 39 (7) from diarrhœa and enteritis under two years, and 14 (1) from influenza. The figures in parentheses are those for London itself.

Thurrock and Huddersfield reported the only deaths from typhoid. Manchester had 2 deaths from whooping-cough. Fatal cases of diphtheria were scattered singly over 10 great towns. Six deaths from diarrhœa occurred at Liverpool, 4 at Birmingham.

The number of stillbirths notified during the week was 233 (corresponding to a rate of 39 per 1000 total births), including 42 in London.

"... The widespread tendency of cutting down consumption and actually reducing living standards as a consequence of armament policies brings out the sharp contrast between this form of public spending and public spending designed as a recovery measure. Although both produce an initial increase of activity, the latter aims at stimulating consumption, whereas armament spending has to be accompanied by special measures to prevent an expansion of consumption and a rise in living standards."—J. G. WINANT in his first annual report as director of the International Labour Office.

OBITUARY

ARTHUR LOGAN TURNER

M D, LL D EDIN, F R C P E, F R C S E, F R S E

Dr Logan Turner, who died in Edinburgh on June 6, was the second of the five children of Sir William Turner, anatomist and medical educationist, and Agnes Logan, farmer's daughter of Burnhouses, Berwickshire Shortly after his birth his father succeeded to the chair of anatomy in the University of Edinburgh and he later became principal and vice chancellor of the university and its representative on the General Medical Council Sir William was a great teacher and organiser and in his leisure a keen traveller, but in his home there was nothing in the nature of sport It was a stimulating house to live in, often full of guests eminent in science, literature or art, though Sir William never lost contact with student life Arthur followed his brother to Fettes College and Edinburgh University where he took his medical degree in 1889, two years later he became F R C S E After a house appointment and assistantship to Thomas Annandale he had a mind to become a general surgeon, but was dissuaded by an injury to his hand which led him instead to specialise in diseases of the ear, nose and throat His first appointment in this specialty was surgeon to the Deaconess Hospital, and he was appointed laryngologist to the Royal Infirmary in 1906, remaining there until 1924 when he became consulting surgeon During the late war he served at the 2nd Scottish General Hospital with the rank of captain, R A M C (T F) After retirement from active work at the Royal Infirmary he was elected president of the Royal College of Surgeons of Edinburgh and of the Medico Chirurgical Society, and he was made an hon F R C P In 1928 he was Semon lecturer, and he was also president of the section of laryngology and otology of the Royal Society of Medicine, and corresponding member of many American and continental societies But his public service and a considerable private practice never stood in the way of the literary work in which he found his chiefest pleasure He was joint editor of the *Journal of Laryngology and Otology* 1921–29, his "Manual of Diseases of the Nose Throat and Ear" went through several editions, and his historical sense found play in the biography of his father published in 1919 and in the "History of the University of Edinburgh, 1883–1933, which was a supplement to Sir Alexander Grant's story of its earlier years When the Royal Infirmary completed its second century it was Logan Turner who told its story which contributed to the success of the appeal for the extension now happily completed

Drummond Young Edinburgh

Dr Edwin Bramwell writes Logan Turner never seemed to age He was never ill, he gave the impression, as I said to him not many weeks ago, that he might live well into the nineties His passing, as the result of a coronary thrombosis, came as a shock to his many friends and is a grievous blow to the Edinburgh medical school We could ill afford to lose him

"A distinguished research worker and exponent of his specialty, an indefatigable worker who insisted on meticulous exactitude, an impressive teacher and an able organiser, I doubt whether anyone has ever served a hospital charge more conscientiously or made better use of the clinical material at his disposal Always encouraging, considerate and generous to a fault, his personality compelled the affection and respect of his juniors Little wonder that he was regarded by them as the ideal chief Thorough in his methods he availed himself to the full of extraneous expert knowledge on the borderland of his specialty As a consultant I have known no more understanding or helpful colleague, and he was gifted too with a breadth of outlook rarely met with in the specialist The patients' outlook and requirements were his first consideration and he inspired them with confidence.

"Turner's *alma mater* had no more devoted son His researches into the annals of the school were outstanding contributions The biography of his father, his 'Story of a Great Hospital,' the 'History of the University from 1883–1933,' which he inspired and edited, and the *University Journal*, which he edited during the first ten years of its existence, are records of his unflagging industry But, quite apart from these publications which bear his name, Turner gave of his experience ungrudgingly whenever it was called for He took an active part in the management of the Royal Infirmary and other hospitals for many years and he played a prominent rôle in many of the activities of the school The students had no better friend, for he was always ready to enter into their projects.

"But it is especially of his personality that I would write To say that Turner was popular would be incorrect, for he did not seek popularity and shunned publicity He was not a witty speaker, he did not sparkle in society, he never played to the gallery Duty was, I think, his motto One of the most unselfish men I have ever met, he stood for all that was honourable, he was a man whom everyone trusted and in whom everyone had confidence Even when he held strong views he would listen considerately to what others had to say he did not try to force his opinions upon them and he was always open to conviction If he had a failing it was his modesty—and yet this was one of his attractions He resembled his father in many ways but without his commanding presence and impressive voice I only once heard Turner make a speech of any length A question of policy was under consideration, numerous facts had to be marshalled and conflicting views conciliated. It was the speech of a statesman and I saw the speaker in a new light

"A great medical school mourns a devoted son His intimates will remember not the versatility of his accomplishments but the simple unassuming gentleman with a subtle attractiveness and sympathy which they had the good fortune to enjoy "

Dr Logan Turner was unmarried and is survived by his elder brother, Dr W Aldren Turner

FRANCIS ROBERT SEYMOUR

M.D. DUBL., D.P.H.

Dr. Francis Seymour was at work as usual at the Ministry of Health on June 6, but he was taken ill that afternoon and died during the night of cardiac disease. Seymour was born in 1882 at Armagh, in Northern Ireland, where his father, Robert Seymour, was curate. He went to three public schools, the Royal School, Armagh, St. Columba's College, Dublin, and Campbell College, Belfast. He then proceeded to Trinity College, Dublin, where he had a brilliant career, winning the first foundation scholarship, the gold medal and a senior moderatorship in chemistry and physics, taking his M B. with honours and his M.D. in 1907. After graduation he studied bacteriology and pathology at St. Mary's and King's College Hospitals, London, and became pathologist to the London Temperance Hospital.

In 1912 Seymour was appointed a medical inspector of the Local Government Board. Sir Arthur Newsholme was then the medical officer of the Board and his colleagues included George Buchanan, Richard Reece and Bruce Low. It was customary to attach all new entrants to a senior member of the staff "for purposes of instruction," and Seymour had the good fortune to be attached for this purpose to Frederick Mivart, who initiated him into the mysteries of official procedure and remained his lifelong friend. In the early days of the late war Seymour played his part in the work of preventing infection among the large masses of troops in training. In 1915 he was attached to the War Office and he was eventually promoted to the rank of major in the R.A.M.C. At the end of the war he became secretary to the interdepartmental committees on tuberculosis and the prevention of infectious diseases in connexion with demobilisation. Since then, as a medical officer of the Ministry of Health, he had made a particular study of the prevention and treatment of tuberculosis, and the measures necessary to ensure wholesome food- and water-supplies. On account of his special knowledge and experience he was chosen in 1934 to report on the water system of Bermuda. He also took part in a study tour in Poland organised by the health section of the League of Nations, and wrote a report on the health services in that country, which appeared in the *Medical Officer*. Both of these reports were masterpieces of clear statement and compression. In 1935 he delivered the Chadwick lecture on "Men and Masses"—an admirable survey of the evolution of public-health endeavour and a subtle analysis of preventive medicine as a philosophy. He made few appearances as a formal lecturer but he could delight an audience with his forceful delivery and his skilful mingling of wisdom with droll stories of his own invention. In 1935, too, he was appointed deputy senior medical officer of the section of the Ministry's medical department which deals with the relation of food to health and disease. Last autumn an official visit to Holland gave him a fresh opportunity for field investigation and much of his energy had since been devoted to studying the differences between Dutch health statistics and our own. In Holland, as in the other countries he visited, his understanding of men made him many close friends. Only two months ago he was promoted to be principal regional medical officer for south-west England, and had already done an immense amount of work in connexion with the emergency medical services in his area. "On the whole," he wrote a few days before his death, "I am very much pleased with the new system and think it is full of opportunity."

It was always a happy adventure to visit at the Ministry of Health. warm welcome was certain, but they also exciting sense that something unexpected happen. Seymour never allowed his mind to stale, either in his work or in his many-sided outside. He had no routine in word or the visitor was apt to find himself, at some stage of the official day, plunged into a lively of a problem illuminated for the first time in clear light of Seymour's mind. He was a talker; wit and wisdom jostled with one in his hospitable home, where discussions ranged and wide. He invariably gave convictions, sometimes with startling when it was necessary to criticise, he had knack of tempering the wind by describing some humorous incident in which he himself had figured as the villain of the piece. He was a man interests and had literary, dramatic and talents of no mean order. The theatre was a joy to him. Although he had no material a dramatist, his plays, like his character, were and true. He had a profound knowledge of technique, and it was a rare education to see a in his company. Like so many men of integrity, Seymour wrote much but published He had a fine sense of the right word, and used adjectives sparingly. He will be most of all for his ready wit and repartee, which were a source of delight to his colleagues and his many friends.

In 1916 Dr. Seymour married Dr. Ida Bernard and is survived by her and three

RICHARD CLARKE CABOT

M.D. HARVARD

In this country the name of R. C. Cabot will be remembered for his books on diagnosis, these his readers will have formed an a wise and honest physician, full of common modest, and with a gift for aphoristic statement clarity of exposition.

Richard Cabot was born in Brookline, chusetts, in 1868, and he died in Boston on after a long illness. He was the son of James Cab an overseer of Harvard University, and was educat at Harvard, where he took honours in classics philosophy and qualified in 1892. In 1898 he wa appointed physician to outpatients at General Hospital, and it was there that he loped the original kind of teaching clinic that the basis for his "Differential Diagnosis." Harvard he taught both medicine and powerful combination. In the medical school was appointed instructor in 1903, assistant of medicine in 1908 and professor in 1918. He became lecturer in logic in the university in 1903 and professor of social ethics in 1920. The first edition of his "Clinical Examination of the Blood," whi went through five editions, appeared in 1896, fou years after his qualification, and he wrote "Physical Diagnosis" in 1901 when he was in medicine at Harvard. All his life Cabot took a wide interest in the social aspects of medicine, and before the war he was much quoted for his of the reorganisation of medical practice on a grow system. In 1917 he went to France with the United States Medical Corps, and he served for two at the base hospital at Bordeaux. In the last few years Prof. Cabot had given less time to teaching and more to social problems. He became emeritus of medicine at Harvard in 1931 and from his chair of social ethics in 1934 He was president of the National Conference of Social Work in 1931 and from 1931 to 1933 was president of the Massachusetts Anti saloon League He wrote his "Meaning of Right and Wrong" in 1933 and his "Christianity and Sex" two years ago

Twenty years ago, writes Dr Octavia Wilberforce, I chanced to pick up in a medical bookshop Cabot's "Rewards and Training of a Physician" and a phrase caught my eye as an example of the modest understatement characteristic of the great "As I look back over 25 years of medical work," Cabot wrote, "I can remember but two patients whose lives I believe I saved" I made it my business to find out all I could of this American professor I learned that he held weekly clinics at the Massachusetts General Hospital at Boston, and when I went to the United States I determined to go and listen to him The clinic was an experience and an inspiration Cabot read out in detail the history, the results of investigations and the general findings in each case The audience was a motley gathering of newly qualified internes, colleagues on the staff, and elderly visiting physicians—a negro, a Chinese, any and every type Cabot sat on a table with his legs dangling and asked for suggestions as to diagnoses Smilingly he extracted comments and criticisms from complete strangers both young and inexperienced and old and hard bitten, and worked up a lively discussion At the end he summarised with beautiful clarity the various diagnoses made, finishing with his own Then he summoned the pathologist with his post mortem notes As it turned out, in one case Cabot and everybody else was wrong It is good to remember the spirit in which he took his failure "That is the third time I have made a wrong guess," he said, and he showed us the steps that had led him astray Cabot emphasised how much the doctor *could do for* the dying He told me that when a dying patient shared his great love for music he would play his fiddle to him In his teaching he brought out the value of clinical sense and of the cultivation and maintenance of our five senses, the importance of the psychology of approach, and the need for "treating the human being as if he possessed a mind, affections, talents, vices and habits good and bad as well as more or less diseased organs"

THE LATE MR BOYCE BARROW

Dr Robert Fenner writes: In 1877, when Joseph Lister was elected surgeon to King's College Hospital, Boyce Barrow, then an assistant surgeon, was one of the first to follow his technique, although the majority of London surgeons fought bitterly against him With Henry Smith, William Rose and Watson Cheyne he helped to make world renowned the antiseptic surgery of King's College Hospital. His work both at King's College and the Royal Free was enormous, and his private practice became increasingly heavy

Boyce Barrow was a man of great personal charm, a kind friend and most delightful companion He was never of robust frame or constitution but where work was concerned he never spared himself As a diagnostician he was unsurpassed, and his surgical work was sound and successful He was extraordinarily kind and thoughtful to his house surgeons and dressers and helped many a student over the stile at his work or in difficulties He was a splendid horseman and kept several hacks in his stable, and was always pleased to mount a friend for a morning ride in the Row His smart tilbury, with a cockaded "tiger" standing with crossed arms on the back seat, were well known about town I believe he was the last to sport a private hansom, in which, with a spanking grey, he was driven to the hospitals His knowledge of horses, and all that pertained to them, their anatomy, the treatment of their accidents and diseases, their breaking in and their training, was extraordinary

Although he enriched the realm of surgery with many original operations and technical improvements he wrote little about his work, but he took meticulous care in explaining to his assistants, dressers, and students the steps of the operations he performed He was a delightful host and companion, simple in his tastes, and beloved by his compeers and students alike, and trusted implicitly by his patients from the very highest to the lowest in the social scale I was a student at King's College Hospital in 1878 and had more than fifty years close association with him, both at the hospitals and in private practice, assisting him in a great many of his operations His ready help and skill, given whenever called upon, and his unfailing cheerfulness, made him beloved by all, and his generosity to those unable to pay a "usual fee" was a great help to the practitioners who so greatly trusted him

ALICE MARIAN BENHAM

M D LOND

Dr Alice Benham, who was in practice in Chelsea for 30 years, and was a tireless worker for social and philanthropic causes, died on June 5 at the age of 66 She was a student at the London School of Medicine for Women and qualified in 1904 When she had done her house appointments and before she started general practice she went for a time as medical officer to a mission hospital near Madras In September, 1914, she joined the staff of the British Women's Field Hospital at Antwerp, where she worked up to the day the Germans marched in In 1915 she went to Russia with other women doctors and nurses to attend to the Polish refugees driven out by the German invasion, and found herself responsible for a large district in which all the Russian doctors had been mobilised Since the war, apart from her practice, she had been physician to the St Theresa Hostel, Chelsea, a medical officer to the Church Army Dispensary *in Marylebone Road and a keen supporter* of the St John Ambulance Brigade, being made a Serving Sister of the Order of St John of Jerusalem last year She also lectured to the L C C evening schools and was a member of the Committee of the National Society of Day Nurseries

" It is perfectly true to say that there is a growing body of practitioners who look forward to the time when there will be a salaried service, but I think it is also true that a very considerable, and probably a large and solid, majority of the profession on the rare occasions when they think about these things at all are strongly against any such scheme They are willing most of them, to have extension of medical benefit on a capitation basis, but that is as far as they wish to go My view is that the thing to aim at is some method of getting the general practice of medicine managed in groups that the general practitioner should be persuaded to give up a great deal of his isolation so long as the best side of his individualism in relation to his patients is not affected The aim, then, of the public health service might be to try to provide administratively an organisation within which the general practitioner can work, not to go on taking away from him little bits of work which he can do as well as or perhaps better than, the public health worker"—Prof R M F Picken, *Publ Hlth* June 1939 p 201

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

THE disaster to the submarine *Thetis* in Liverpool Bay moved the House deeply, as it moved the nation as a whole. The Prime Minister was right to promise a full and public inquiry. It is to be hoped that at the inquiry the question whether all possible means for saving life are being used in the submarine service will be explored Will expert medical evidence be called? It is also to be hoped that the practical expression of sympathy for the dependents will be sufficient to meet their needs fully.

* * *

The debate on the Colonial Office vote was not a good one from the Government's point of view. Conservatives, Liberals and Labour united in attacking the Government, and only lack of time prevented many others joining in the critical chorus. The second "review of progress in our dependencies" was issued just before the debate and was also the object of adverse criticism, which it deserved The first review of progress appeared last year signed by Lord Harlech; but this second edition, although more voluminous, is not more informative and in many ways it is misleading.

The review of nutrition, for example, states that "in almost every territory" work of some kind is going on. Proceeding at once to deal with the spending of money to provide supplementary food for school-children it says that Ceylon spends several millions of rupees a year on this object The next sentence deals with efforts made "in many colonies" to introduce new food crops of high nutritive value, to develop animal husbandry and to encourage home gardens. The following sentence speaks of "welfare propaganda" and "maternity and infant welfare centres" If these three sentences are a kind of index of subjects they are badly arranged; but if they are intended to indicate problems of equal importance they are misleading In the Colonial Empire there are about 56 million people of whom 40 million are in West and East Africa. This 40 million in tropical Africa, in an area comparable in size with European Russia, are a predominantly agricultural population living on their own land, and the improvement of nutrition by new crops and animal husbandry is of so great importance that the question of the "relief measures" mentioned as applied to Ceylon is by no means of equal importance or significance

The section on health work in West Africa may also give rise to misconceptions This refers to malaria, yellow fever, trypanosomiasis and sleeping-sickness; there are also references to cerebrospinal meningitis, smallpox and leprosy. It is interesting to know that the trypanosomiasis work is being done by two sections, for treatment and control, and to have the statistics of 1938—361,000 people examined, and 21,037 infected, of whom 20,416 had received a full course of treatment at the end of the year. In addition there is a paragraph referring to Yaba Medical School at Lagos, Nigeria, where Africans can obtain diplomas registrable in Nigeria But the report does not mention that such diplomas are registrable only in Nigeria and does not discuss the vitally important question of the increase of African practitioners.

The statements are all interesting and important so far as they go But they are little more than a catalogue. The criticism of them is that they do not reveal the real health problem of West Africa. The chief cause of death in West Africa, among Africans, is the group of respiratory diseases; pneumonia and tuberculosis are a much more serious menace to health than either malaria or sleeping-sickness As causes of ill health the various parasitic worms have perhaps pride of place, and probably 90 per cent. of Africans suffer from one or more kinds of worm infestation.

The short reference to housing conditions in the mining areas of the Gold Coast says that in several such areas "unauthorised hovels" have been "rushed up" before control was obtained. This hardly does justice to either the mining companies or the Gold Coast medical organisation. The fact being that the Government has not either defined the health and housing duties of the mining companies with precision or accepted its own responsibility for housing of mine-workers apart from the mining companies. The result is that the many thousands of African labourers attached to the Gold Mines (and others) are living for the most part in pestilential slums. The men do not bring their wives with them and the sexual conditions are such as might be expected with gonorrhœa very prevalent. Gonorrhœa is in any case a serious cause of illness among Africans and a big factor in the relative sterility of some native populations This disease is mentioned in connexion with the Masai of East Africa, as a cause "probably leading to the extermination of the tribe," but its general importance is not brought out

While fully realising the difficulty of making a general survey of health conditions in the whole Colonial Empire in a few pages, it would surely be better to get what is said into some kind of perspective and draw attention to the real difficulties against which the colonial health services are fighting.

The problem of leprosy has been already mentioned and in this report it is stated that in Nigeria (population 20,000,000) there are 200,000 cases This is hardly an estimate—it is just a guess. Other guesses by senior and responsible Nigerian medical officers (not mentioned in this statement from the Colonial Office) put the figure at nearer 1,000,000; and one very responsible estimate exceeds that figure And the Nigerian Government are quite unable to tackle it—not because they do not wish to do so, but because they are already overloaded with other work and not provided with either the funds or the staff for leprosy work The present plan of leaving it, for practical purposes, to the missions, cannot possibly cover more than a small fraction of the cases Nigeria is apparently the headquarters of leprosy at the moment, and it may be that the epidemic there is at its peak With a disease of such slow development the curve of epidemic incidence spreads over many years. But a problem of this magnitude and one depending so much on defective social conditions is not satisfactorily treated by leaving it to purely missionary effort

"The statement relating to the Colonial Empire" does not give a clear picture of the health situation and in the health chapter and in others it deserves the characterisation of Mr Brendan Bracken, Conservative M P for North Paddington, who described it as like "a maiden aunt telling a sophisticated nephew the facts of life."

The report of the Inter departmental Committee n Abortion, published last week, may lead to arliamentary activity shortly It will certainly e considered by the committee of medical Members f Parliament

FROM THE PRESS GALLERY

Health Services in the Colonies

IN the House of Commons on June 7 Mr MALCOLM ACDONALD, Secretary of State for the Colonies n introducing a vote for expenses of the Colonial ffice, gave a review of the health services in the olonial territories He said that just as the agri ultural scientists were waging a ceaseless campaign gainst the pests and diseases which afflicted agriultural produce, so the medical scientists throughout he colonial Empire were waging a similar campaign gainst the pests and diseases which afflicted mankind an's powers of aggression were puny compared with he powers of conquest of an insect like the tsetse ly, which could descend suddenly on the cattle and he men of a settled district and make life so intolerable hat they moved to other lands, and so before long cores of square miles of territory returned to waste nd bush whose practical sovereignty belonged to he tsetse fly Medical scientists had been counterttacking for years past, and were reconquering those erritories which had been taken by that insect ut it was not only in the case of sleeping-sickness hat their medical scientists were gradually reducing he ravages of human diseases They were doing he same with yellow fever, leprosy, yaws, malaria, uberculosis and other diseases

In other ways too, he said, they were seeking to uild up the health of our fellow citizens in the olonies For instance, sometimes a cause of illness ay in malnutrition, and often it was due not to nadequate food but to the wrong kind of food Hence they were urging in the colonies that the inhabitants should grow a greater variety of fresh foodstuffs for their own consumption They were lso seeking information as to the best types of foodstuffs required in different conditions in the various territories They had started this year a series of field surveys on the question of diet in relation to health A beginning had been made recently in Nyasaland and the team of experts conducting this survey would continue their investigations in other territories later on A good deal of nutrition work was being done in regard to food for the natives In Nairobi the Government were giving about 1000 African school children extra supplies of milk, and in many parts of the colonial Empire the local governments were giving supplementary food to children at school In Ceylon the government had spent as much as 1,000,000 rupees a year on feeding school children But the experiments were not confined to school-children, they had also started experiments with adults In one case they chose some 200 workmen on the building works at Kampala station in Uganda, men who were drawn from a tribe which was notorious for poor physique and inefficient work He hoped that the experiment of giving these men a full diet including meat would prove that such people could be turned into as good workmen as existed anywhere in East Africa

There was another factor which in the colonies no less than in this country must have a beneficial effect on the health and happiness of the population, and that was good housing More and more of the authorities in the colonies were bending their energies to the provision of proper dwellings for their people both in the towns and in the country In many places there was a great deal of leeway to make up There were slums in colonial capitals too many hovels in the mining centres, and in the native reserves the mud huts did not come up to modern standards of roominess and sanitation But there were many indications of considerable housing activities on the part of local governments New legislation had been passed to control and ensure better standards of sanitation and building in the mining areas of the Gold Coast, slum-clearance was proceeding in Accra and Sekondi, in Uganda more sophisticated peasants were abandoning mud and wattle huts for rectangular houses with two, three, four, or even more rooms Slums were coming down in Jamaica, and similar reports came from other colonies

The Colonial administration were anxious that the people of the colonies should develop the mental and intellectual capacity to take part fully in the work and enjoyment of modern life They sought to develop a sound education system in each one of the colonies, but their efforts were limited by the money available Nevertheless, if the progress was sometimes slow it was steady The most appropriate and surest instruments in the long run for accomplishing the steady advancement of the African people would be educated and responsible African leaders themselves, and our main objective was to train the native people to stand always a little more securely on their own feet Under British guidance the local populations were producing more and more of their own doctors and nurses, their own schoolteachers and agricultural officers, their own civil servants and lawyers, and their own leaders in every walk of life More and more also they were producing their own legislators and their own executive officers, and that ultimately was the crux of the whole matter

SUNDRY CRITICS

SIR RALPH GLYN suggested that under present conditions the affairs of our colonial Empire did not receive sufficient attention from Parliament. It was up to all who believed in good government to see to it that Parliament should recognise its own responsibility and not unload it on to an unfortunate minister of the Crown Surely it would be possible to devise something in the way of a council or committee where people interested in colonial matters could sit in more or less permanent session He had been struck by what had been done by Italy Where Italy found the money he did not know, but in Libya today there were excellent roads, town planning water-supply and schools, excellent houses, school clinics in the villages, draining of the marshes and so on If it was possible for Italy to carry through these schemes surely it was also possible for the British Empire

Mr CREECH JONES urged the importance of creating an auxiliary medical corps for the colonies which might absorb dozens of the doctors and nurses who had been driven out of Germany and Austria and who were longing for an opportunity of performing useful work Was it not possible to create alongside the existing medical service an auxiliary medical corps which could for instance, man moving field dispensaries? There were populations in our colonial territories suffering cruelly from disease and over great areas no preventive work was being done

Mr NOEL BAKER said that social research and education should not be limited—as the Secretary of State considered that it should—by what each individual colony could afford, with perhaps a little help, mostly by way of loan, from the Colonial Development Fund That was a fundamental error which was utterly wasteful It would keep the native people at their present low standard of living and leave us with a vast Imperial estate which was undeveloped to the great loss of the inhabitants and of the world for which we were trustees He would like to take the illustration of health Some years ago when he was an undergraduate in America he was told of the devastations of hookworm in the Southern States A doctor informed him of the work he had done to cure and prevent it In Africa over 80 per cent of the population were infected by some kind of worm disease Frequently as many as six kinds had been found in the same individual These diseases could be cured; it was only a question of money and of knowledge He emphasised the need for increasing the medical personnel in the colonies. The French, he said, were at the present time making an extraordinarily successful experiment in training African doctors and nurses in their institution at Dakar. Supposing we were to take into our Colonial Empire German refugee doctors, who would gladly go for a pittance a year to any job that would give them a useful avenue of occupation in their misery, they could undertake the training of the native doctors and nurses who were required. He believed that for a trifling expenditure they could in a few short years absolutely revolutionise the health conditions in our colonial Empire to the immense economic benefit of the Empire as a whole.

Mr. MACDONALD, in reply, agreed that the situation in the colonial Empire was nothing to be complacent about; but that was no reason why they should concentrate on painting an entirely black picture of colonial administration. The whole problem was where they were going to get the money to finance new developments. The Government were anxious to settle refugees from Central Europe in our colonial Empire so far as it was practicable. He promised to give careful consideration to the suggestions which had been made in the course of the debate for securing that Parliament should be able to take a larger share in the shaping of colonial policy and administration.

Collections for Voluntary Hospitals

In the House of Lords on June 13 the Charitable Collections (Regulation) Bill, which has already passed through the House of Commons, was read a second time.—Lord LUKE said that the voluntary hospitals supported the general principles of the bill which they regarded in many respects as an improvement on the old bill. The local hospital was of all local charities the one which was most essential to its area, and he urged that it should not be placed in an inferior position to any non-local charity. It seemed that under this bill a hospital's power of collecting in its own area might be restricted, whereas what the old bill described as a national charity might be able to come in and collect in the hospital's area without being limited by the same restrictions, because it might be exempted by the Home Secretary from having to get a local police licence anywhere. A hospital might serve several police areas, but all police authorities might not hold the same views about the grant of a licence; and in the new bill there was no right of appeal as there was in the old one. He hoped the measure would be amended to permit an appeal to the Home Secretary. No fraudulent promoter of a charity would risk going to an appeal.

The Adoption of Children (Regulation) Bill was read the third time and passed in the House of Lords on June 13.

QUESTION TIME

WEDNESDAY, JUNE 7

Locust Pest in Africa

Dr. HADEN GUEST asked the Secretary of State for the Colonies whether, in view of the recommendations of the survey on the locust pest in Africa which had just been published by His Majesty's Stationery Office, he would inquire into the possibilities of more continuous investigation and control throughout the territories affected.—Mr M. MACDONALD replied. Investigations into the locust problem have indicated that the most promising results are likely to be achieved by the establishment of patrols and measures to check swarming at the permanent breeding grounds of the different species. Consultations are taking place with various colonial governments as to their coöperation in the projected establishment of international control schemes, as recommended by the Fifth International Locust Conference in Brussels last year; and I am hopeful that negotiations will shortly take place with other interested governments with a view to the establishment of these schemes.

Health of Senior Naval Officers

Wing-Commander JAMES asked the Parliamentary Secretary to the Admiralty whether consideration may be given to the institution of a medical board for senior naval officers to ensure some measure of physical fitness for those assuming appointments, and whether having regard to the fact that in the last three years three admirals had died and six others had had to be invalided he would institute such a reform without delay.—Mr. SHAKESPEARE replied: I will consider my hon. friend's suggestion, but medical records show that in few, if any, of the instances to which he refers would the eventual cause of death or invaliding have been detected by medical examination before the appointment was taken up.

THURSDAY, JUNE 8

Medical Inspection of Militiamen

Mr STEPHEN asked the Minister of Labour how many medical boards were being set up to carry out the medical inspection of the militiamen under the Military Training Act, and how many men each medical board might be expected to examine each day.—Mr. LENNOX-BOYD replied: 149 medical boards have been set up. They will hold one or two sessions a day, each session lasting about two and a half hours. About thirty men will normally be examined at each session.

Diphtheria Immunisation in Guernsey

Sir FRANCIS FREMANTLE asked the Home Secretary how many children who had been immunised in Guernsey against diphtheria contracted the disease during the past year, how many who had not been immunised contracted the disease, and whether the cases were mild, severe or fatal in either group.—Sir SAMUEL HOARE replied: I have obtained the following report from the medical officer of health for Guernsey which gives the desired information:—

1938

Children under 14 inoculated (over 8 weeks) who contracted diphtheria 7

These were all mild cases with one exception, which, although a severe case, made a rapid recovery. There were no deaths.

Children under 14 who were not immunised who contracted diphtheria 34

The majority of the cases were mild, but a proportion were severe. There were fourteen deaths.

June 6, 1938, *to June* 6, 1939

Children under 14 inoculated (over 8 weeks) who contracted diphtheria 1

These were all mild cases with one exception, which, although a severe case, made a rapid recovery. There were no deaths.

Children under 14 who were not immunised who contracted diphtheria 3

These were mostly of a mild type, but there were some severe cases with thirteen deaths.

Drugs from Eire

Mr. WAKEFIELD asked the Home Secretary whether his attention had been drawn to the facts in a case heard in Dublin police-court on May 25 which indicated that a company with offices in London and Dublin, had been taking advantage of the provisions of the poisons legislation of Eire to sell freely to the public in Great Britain dangerous drugs, the sale of which was strictly controlled in this country, and to ask what steps he proposed to take to deal with this abuse.—Sir SAMUEL HOARE replied: Habit-forming drugs which are within the scope of the Dangerous Drugs Act are subject to restriction whether sold in the United Kingdom or sent into the United Kingdom as the result of a sale effected outside the United Kingdom. But the Pharmacy and Poisons Act applies only to sales in this country, and in the case to which my hon. friend refers the drug was one which is subject to the Pharmacy Act but not to the Dangerous Drugs Act. To control the importation of all substances which are subject to the Pharmacy Act would, I think, cause much inconvenience to legitimate trade, and cerence hitherto does not suggest that legislation for this purpose would be warranted

Civilian Anti-gas Respirators

Mr DAY asked the Lord Privy Seal whether he would state from experiments made by the experts of his department the length of time the gas mask which had been issued for the protection of the civilian population would give immunity and protection against the highest concentration of gas likely to be encountered, and whether he was satisfied that the materials used were amply robust for the purpose required —Sir JOHN ANDERSON replied The general civilian respirator provides protection for several exposures to the highest concentration of gas which is likely to be encountered in war time conditions The actual length of time for which the respirator would remain effective would depend in part on the nature of the gas used, and cannot be precisely stated Trials have demonstrated that, provided the requisite care is taken of the respirator both in store and after issue, the materials used in its construction are amply robust for the purposes for which it is designed

Mr DAY Are we to understand that all the respirators that have been supplied to the population comply with all these conditions ?—Sir J ANDERSON No Sir That is partly the reason why I am at present engaged in accumulating a central reserve from which the respirators which have become damaged or unserviceable can be replaced

Anti-tuberculosis Services in Wales

Mr JAMES GRIFFITHS asked the Parliamentary Secretary to the Board of Education what steps had been taken by his department to deal with the problems of unsuitable school buildings and the unsatisfactory arrangements for meals in schools, disclosed in the report of the Committee of Inquiry into Anti tuberculosis Services in Wales —Mr KENNETH LINDSAY replied : The board have asked local education authorities in Wales to supply them with their comments on the matters dealt with in chapter VIII of this report Authorities which have not yet replied have been pressed to do so at an early date The board are continuing their endeavours to secure the improvement, replacement or closure of the schools which are still on the black list and my noble friend has made it clear that he is prepared to take the strongest possible action if this is found to be necessary in any particular case As regards the provision of midday meals in schools the board encourage authorities and managers to make such provision wherever practicable, and it is customary in senior schools for a room for dining, and a kitchen, to be provided

Major MILNER asked the Minister of Health what action he proposed to take to remedy the unsatisfactory conditions to which reference was made in the report, especially as regarded the low salaries paid to sanitary inspectors and inadequate travelling allowances, the appointment of unqualified persons as sanitary inspectors, the failure on the part of local authorities to accept the advice of their officers, the holding of multiple appointments by sanitary inspectors the registration of cowkeepers and dairymen without regard to the condition of their premises; and the inadequacy of staff for the purposes of meat inspection and other duties.—Mr ELLIOT replied As I have stated in answer to previous questions, I have asked for the observations of the local authorities in Wales on these and other issues arising out of the report, and as soon as I have received their observations, I propose to arrange a conference at which these matters will be fully discussed

Mr JAMES GRIFFITHS asked the Minister of Health what sites had been chosen for the proposed hutted hospitals to be erected in Wales in consultation with the Welsh National Memorial Association; and when it was proposed to proceed with their construction —Mr ELLIOT replied As stated in the reply which I gave on May 11, the districts in which the hutted accommodation is to be erected are North Wales, Central Wales, possibly in the Shrewsbury area and South Wales As regards North Wales, the building of huts for 200 beds as an extension of the North Wales sanatorium near Denbigh is to begin immediately, and I am personally cutting the first sod on Saturday next My officers are visiting a number of sites in South Wales in order to select one which will meet the requirements of a complete hospital As regards the third district, I am in communication with the local authorities with a view to attaching huts to an existing institution Construction in these two cases will commence as soon as the final selection has been made and the necessary estimates obtained

Rural Water-supplies

Mr CROWDER asked the Minister of Health whether he could report the progress made in supplying those villages that were short of water during the last drought, and to which assistance was to be provided under the special grant made —Mr ELLIOT replied Since the drought schemes have been sanctioned for 2700 parishes at an estimated cost of £9,000,000, and approximately 80 per cent of the schemes have been completed

Hospitals and Civil Defence

Sir HENRY MORRIS-JONES asked the Minister of Health whether his attention had been drawn to the booklet prepared by and for use at the Manchester Royal Infirmary in connexion with air raid precautions scheme, and whether his department could use it as the basis of its recommendations to other large hospitals in our great cities —Mr ELLIOT replied I have seen the booklet and consider it most useful Its object is, however, to instruct members of the infirmary staff in their duties in the event of air raids, and it would not be suitable for general use, in view of the wide variations between the different hospitals

Slum Clearance and A R P

Miss WARD asked the Minister of Health how many local authorities had suspended work on slum clearance and overcrowding schemes to concentrate on civil defence needs —Mr ELLIOT replied As my hon friend is aware my right hon friend, the Lord Privy Seal, issued on April 18 last a circular to local authorities requesting them to give priority to civil defence matters over other business for the ensuing three months Seven cases have come to my notice in which local authorities have decided to suspend housing operations for the time being as a result of this request

Sale of Drugs by Unqualified Persons

Mr GARRO-JONES asked the Minister of Health whether, in his present consideration of whether further control should be imposed on the sale of proprietary medicines he would extend his examination to the control of drug sales in general and pay due regard to the desirability, in the interests of public health, of regulating the growing volume of sales of numerous kinds of drugs and packed medicines by persons of no training or qualification to the increasing commercial detriment of qualified pharmacists who had an essential place in our public health system —Mr ELLIOT replied I will consider the question whether in the interests of public health any further special control is necessary in regard to the sale of drugs by persons other than qualified pharmacists.

MONDAY, JUNE 12

Militiamen and the R G 's Classification

Mr OLIVER asked the Minister of Labour whether in view of the fact that Clause 4 of the Military Training Bill provided for the first time, for a medical examination of a comprehensive cross-section of the male age group 20–21, and taking into account the results of the examination conducted by the Ministry of National Service in 1917–18 on men of 18 years of age in conjunction with the present lack of knowledge as to the health and physique of corresponding sections of the male population he would consider arranging for the medical boards to elicit sufficient information from the examinees to enable the results to be classified according to occupational and economic status by adopting the Registrar General's social classifications as employed in the Decennial Supplement for 1930–32, Part II (a) Occupational Mortality —Mr ERNEST BROWN replied : The records of the medical examinations of militiamen will yield valuable information as to the health and physique of men of different occupations in the 20–21 age group but for technical reasons it will not be possible to classify the results in the way done in the Decennial Supplement

Conference on Cardroom Dust

Mr. **Sutcliffe** asked the Home Secretary if he could make any further statement with regard to the Manchester conference on cardroom dust —Mr. **Peake**, Under-Secretary, Home Office, replied: Certain preliminary investigations are now being made, and it is hoped to hold the proposed conference early in July.

Medical Evidence in Motoring Cases

Sir **William Davison** asked the Home Secretary whether he would hold an inquiry into the methods used in connexion with the payment of medical men employed to give evidence in certain motoring cases where drivers were charged with being drunk in charge of a motor-car, and, in particular, as to whether the medical man was informed that he would be paid a larger fee if a conviction was obtained —Mr. **Peake** replied · It would clearly be improper to make the amount of the fee payable in such cases in any way dependent upon the result of any subsequent legal proceedings If my hon friend will furnish me with particulars of any cases in which it is suggested that this practice has been followed, inquiries will certainly be made.

TUESDAY, JUNE 13

University Students and Military Service

Mr. **Kennedy** asked the Minister of Labour if he had now reached a decision regarding the position of undergraduates at Scottish universities and colleges affected by the Military Training Act; and if he could give an assurance that there would be no interruption of degree examinations or the students' preparatory work —Mr W S **Morrison**, Chancellor of the Duchy of Lancaster, replied Undergraduates now at universities or university colleges in Scotland as well as in England and Wales and those who will be entering universities as full-time students this autumn will be permitted, if they so desire, to postpone their liability to be called up for military training until the conclusion of their course of study as approved by the university.

Mr. **Robert Gibson** asked the Minister of Labour if he had now reached a decision on the point relative to postponement in the case of undergraduates who had signed the register of conscientious objectors so as to put such undergraduates on the same footing as those who had signed the military-training register; and if he would make a statement on the subject —Mr. W. S **Morrison** replied · The Military Training Regulations, 1939, provide that an application to a local tribunal by a person who has been provisionally registered in the register of conscientious objectors shall be made within fourteen days of the date on which he was so provisionally registered, or within such other period as the Minister may in any particular case for special reasons allow. My right hon friend proposes under the power given by these regulations to allow a university undergraduate who has provisionally registered as a conscientious objector to make his application to the local tribunal within a period ending *not* later than one month after the conclusion of his course of study as approved by the university. Any such undergraduate will be required to obtain annually from the proper university authority a statement that he is a full-time member of the university, and giving the date on which his approved course of study is due to terminate This will place an undergraduate who is a conscientious objector, in the same position in this respect as an undergraduate on the military-training register

Medical Examination of Militiamen

Mr. **Hepworth** asked the Minister of Labour whether the medical examination of military trainees was to be different from that on the occasion of the last war; whether it was to be conducted by five doctors, each examining some part of the trainee's anatomy, instead of one doctor making the entire examination; and whether the chairman was to examine at all, or only to base his final recommendation upon the report of the other medical men —Mr. **Ernest Brown** replied: The medical examination of militiamen will be conducted by a board consisting normally of five doctors, one of whom will act as chairman. Each of the four members will separately carry out certain specified parts of the examination and will recommend the appropriate medical grade in respect of his part of the examination The chairman will see each man stripped and will consider the recommendations, but will not re-examine each man unless there is a doubtful condition which may affect the grading In this case he will himself make an examination and consult with the members of the board

Mr **De la Bere** asked the Minister of Labour whether he would consider making an intensive examination of militiamen at one or two selected Army depôts with a view to eliminating the nervously unstable youth who would be liable to suffer from shell shock in the event of emergency —Mr. **Hore-Belisha**, Secretary of State for War, replied: In view of the fact that the medical examination carried out under section 4 of the Military Training Act is specially designed to prevent men who are unfit for military training owing to nervous instability from entering the militia, it is considered that a subsequent medical examination in this connexion is not necessary.

The Medicine Stamp Duties

Mr. **Hannah** asked the Chancellor of the Exchequer what steps he proposed to allay the grave apprehension among pharmacists at the proposed repeal of the medicine stamp duties as depriving them of an ancient right to be the only retailers of their own preparations unstamped, with a due sense of responsibility —Sir J. **Simon** replied I do not consider that the repeal of the medicine stamp duties need have the effect which my hon. friend fears. It will be open to pharmacists who are at present the only retailers of their own preparations unstamped to continue this practice if they desire to restrict the channels of sale in this way; but repeal of the duties will remove the anomaly by which at present the same preparation may be sold unstamped by chemists but must be stamped when sold by traders who are not chemists

Sir W. **Davison** asked if it would not be a safeguard to the public that these patent medicines should be sold through chemists who knew the ingredients and would not sell them if they were actively detrimental —Sir J **Simon**. In some cases a chemist knows the ingredients and in some cases he does not

Mr. R C **Morrison** asked if the right hon gentleman was aware that the shares of Beechams Pills went up on the repeal of the acts

No further reply was given.

THE LANCET 100 YEARS AGO

June 15, 1839, p. 425.

From a clinical lecture on lateral curvature of the spine by Mr Frederick Hale Thomson.

The amount of exercise, or rather the extent to which the *want of exercise* is carried in many boarding-schools will appear incredible to those who have not personally investigated the subject The following is the card of a young ladies' boarding-school, drawn up on the spot, a few years since, from the report of several of its inmates —

At 6 in the morning the girls are called, and rise; from 6 to 8, learning or saying lessons in school, 8 to 8½, at breakfast, 8½ to 9, preparing lessons out of school, some of the girls permitted to do so in the garden; 9 to 1, at various tasks in school; 1 to 1½, out of school, but must not go out of doors, reading or working and preparing for dinner, 1½ to 2, at dinner, 2 to 5, in school, various tasks, 5 to 5½, tea, 5½ to 6, preparing to go out; dressing or reading, or playing in school; 6 to 7, walk, generally arm-in-arm, on the high road, many with their books in their hands, and reading

Two days in the week they do not walk in the evening at all, being kept in for dancing .. It is to be remarked that they never go out unless the weather is quite fine at the particular hours allotted for walking They go to church . . . twice every Sunday, on which day no other exercise is taken.

MEDICAL NEWS

University of Cambridge

Mr J B Hunter and Dr E C Lindsay have been appointed additional examiners in surgery for part I of the final M B examination to be held in June, 1939 Dr W J Turrell has also been appointed substitute examiner for the diploma of medical radiology and electrology for 1939 in place of the late Dr E P Cumberbatch

University of Sheffield

Dr R W John has been appointed hon demonstrator in pathology in the university

University of Wales

At recent examinations the following candidates were successful in obtaining the tuberculous diseases diploma —

H R Ackermann, V N Ananda Theertha B K Banerjee, R N Chaudhuri, Elizabeth M R Clarke S K Das Gupta, M D Deshmukh, M A J Faridi, N V Gokhale, A C Guha, E A M Halsted, R M Patel, R F Peters, M U Rao, Pasupulate Ramakrishna and D D Verma

Queen's University, Kingston

Dr E M Robertson has been appointed professor of obstetrics and gynæcology in Queen's University, Kingston, Ontario, and head of the obstetric and gynæcological services of Kingston General Hospital Dr Robertson is a lecturer in clinical midwifery in the University of Edinburgh and junior assistant gynæcologist to the Royal Infirmary

Oxford Graduates' Medical Club

The summer dinner of this society will be held at Exeter College, Oxford, on Friday, June 23, at 7 30 P M Lord Nuffield will be in the chair Further particulars may be had from Mr E A Crook, the hon secretary, 99, Harley Street London W 1

Lady Tata Memorial Grants and Scholarships

The trustees of the Lady Tata memorial fund have awarded the following grants and scholarship for research in blood diseases with special reference to leukæmia —

Grants for research expenses—Dr Jørgen Bichel (Aarhus, Denmark) Dr Julius Engelbreth Holm (Copenhagen), Dr M P J Guérin (Paris) Prof Karl Jármai (Budapest), Prof James McIntosh (London) Prof Eugene L Opie and Dr Jacob Furth (New York), and Dr Joachim Wienbeck (Breslau)

Part time personal grant and grant for research expenses.—Dr Werner Jacobson (Cambridge)

Whole-time scholarship—Dr Edoardo Storti (Pavia, Italy)

Park Hospital for Functional Nervous Disorders, Oxford

On June 1 Sir Farquhar Buzzard regius professor of medicine of the University of Oxford, opened this hospital which has accommodation for the treatment of 26 patients of both sexes suffering from functional nervous disorders No provision has hitherto existed in Oxford and district for the inpatient treatment of psychoneuroses

Sir Farquhar Buzzard said that the last fifty years had seen a remarkable development in the science of medicine, particularly psychological medicine It was now recognised that active psychological treatment could be of *enormous* value in a large number of cases of functional nervous disorder The development which had been most delayed was that of providing a sufficient number of beds where patients could receive special skilful treatment of an active kind in surroundings away from their homes For poorer people particularly there were very few institutions of that kind in the country He thought they could say they were developing that day the kind of hospital which was so much wanted and which was going to be unique in this district

The hospital formerly known as Highfield Park House is owned by the authorities of the Warneford Hospital and will be administered as a separate unit The new hospital is not under the Lunacy or Mental Treatment Acts, however and will be run on similar lines to those of a general hospital or nursing home No formalities regarding admission will be required The fees are described as moderate and special concessions are being made to a limited number of cases from the neurological clinic of the Radcliffe Infirmary Dr R G McInnes has been appointed medical director

Royal College of Surgeons of England

At a meeting of the council of the college held on June 8 with Mr Hugh Lett, the president, in the chair, Mr Seymour Barling was admitted as a member of the court of examiners, Mr Ernest Hey Groves was appointed to give a Moynihan lecture this year, and the John Tomes prize for 1936–38 was awarded to Mr Arthur Bulleid for his researches into the bacteriology of the mouth Mr W Sampson Handley was reappointed as the representative of the college on the court of governors of the University of Sheffield, and Sir James Walton was appointed the representative on the managing committee of the Schiff Home of Recovery

Diplomas of fellowship were granted to the following candidates —

E R Smith M B Lond St Thos E H C Harper M B Lond St Thos, A B King M B Lond Univ Coll G W Blomfield M B Leeds St Bart's, H G Hanley, M B Lpool Guy's, C O Jeffery, L R C P, London Hosp, H C Hugh M B Lond, St Bart's I G St. C Strange, L R C P, London Hosp, B M Truscott, M.B Lond, Middlesex Venkiteswariyer Sankarambal L R C P Roy Free and Guy's F A Simmonds, M B Camb, St Thos, E G Ward, B.M Oxfd, St. Bart's, Eugénie L Willis M B Camb, Roy Free L R. Leask M.B Lond St Bart's G C L Pile, M B Camb Middlesex and Guy's F G Tuckwell B.M Oxfd St. Bart's, Arnold Gourevitch L R C P, Birm and St Thos, J S Ellis, M B Camb, St Thos J M Small M B Birm, St Bart's, T J Fairbank, M B Camb, St Thos C G Rob, M.B Camb, St Thos D M Wallace M B Lond, Univ Coll A E. Dreosti, M.B Cape Town, Guy's and St Bart's, A H Barber, M B Birm London Hosp, J M P Clark M B Leeds St Thos O M Gardner M D McGill St Bart's A J Innes, M B Edin Guy's, D F Lawson M.B Melb, Guy's, T M Pemberton, M B N Z, D G Phillips M.B N.Z, St Bart's P W S Riley M B N Z, St Thos Arnold Rose, M B Dub Birm, K R. Thomas M.B N Z, Guy's, F B H Trehair, M.B Witwatersrand, London Hosp A K Tulloch, M B N Z St Thos, and A S A. Zikry, M.B Cairo, St. Thos

Diplomas of membership were granted to P H Davison (Birmingham) and E P de Silva (Ceylon and West London), diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following candidates —

B J E Anson, Harigopal Barat, D J T Brinkworth, J C Constable, D G Cracknell, James Crawford, F W Crook, D A A Davis M S H Hakeen, O F Ennis W E T Evans, S M Geffen, R P Harbord, J N H Howell T R Kenderdine D A. Knight B G B Lucas J J McEnery, R R Macintosh Lucy G MacMahon, Audrey Marsden, James Montgomerie Kathleen O Donnell W F Owens H L Pooler, Freda B Pratt Margaret S. Riddell, Shelagh M Streatfeild B I Taft N O G Talbot, S G Talwalkar, A M Williams L J Wolfson and R. L Wynne

The following examiners were appointed for the ensuing year —

Dental Surgery—Surgical section Mr C P G Wakeley Mr E G Slesinger Mr Reginald M Vick, Mr Basil Hume, Mr L F C Norbury, and Mr A C MacLeod

Primary Fellowship—Anatomy Prof Ronald Bramble Green, Mr F I Stibbe Prof F Wood Jones F R S and Mr A M A Moore Physiology Prof John Mellanby, F R S Prof D T Harris Prof. A St. G J Huggett and Prof H P Gilding

Diploma of L R C P, M R C S—Elementary biology Mr A. L Ellis, Mr S R. B Pask, Mr Wilfrid Rushton, D Sc, and Dr Evan Idris Jones Anatomy Dr A J E Cave Prof W J Hamilton, and Prof A B Appleton Physiology Prof D T Harris and Prof Hamilton Hartridge, F R S Midwifery Mr Trevor Davies, Mr J St G Wilson Mr Leslie Williams, and Mr G F Gibberd Pathology: Dr W G Barnard Mr B W Williams Mr D H Patey, and Prof W D Newcomb

Diploma in Public Health—Part I Major General H M J Perry Part II Dr Charles Porter

Diploma in Tropical Medicine and Hygiene—Lieut General Sir William MacArthur and Dr Hamilton Fairley

Diploma in Ophthalmic Medicine and Surgery—Part I Mr Leighton Davies and Mr Affleck Greeves Part II Mr Adrian Caddy

Diploma in Psychological Medicine—Prof F L Golla

Diploma in Laryngology and Otology—Part I Mr N A Jory and Mr Terence Cawthorne Part II Mr Edward Carew-Shaw

Diploma in Medical Radiology—Part I Dr H T Flint Part II Dr Hugh Davies

Diploma in Anæsthetics—Dr A E Daly

Diploma in Child Health—Dr A G Maitland-Jones

The temporary recognition granted to the following hospitals for the six months' surgical practice required of candidates for the final fellowship examination was confirmed Harrogate District and General Hospital (house-surgeon), Warneford, Leamington and South Warwickshire General Hospital (resident house-surgeon). Recognition was also granted to the Radcliffe Infirmary and County Hospital, Oxford, for the posts of resident surgical officer (while acting as house-surgeon) and three general house-surgeons.

Papworth Village Settlement

The Duke of Kent will preside at the annual meeting of the settlement at the Park Lane Hotel, Piccadilly, London, W.1, on Friday, June 30, at 3 15 P M The speakers will include Prof John Hilton and Sir Pendrill Varrier-Jones, F.R.C P.

Emergency Ambulance Service

Of the 151 scheme-making authorities under the Air Raid Precautions Act 100 have now submitted to the Minister of Health their proposals for an emergency ambulance service to pick up casualties other than walking wounded and take them to hospitals or depôts The schemes proposed, of which 42 have been approved, show where the ambulances will be stationed and how the vehicles and drivers and attendants will be allocated between the several posts, and they provide for coöperation with neighbouring authorities. In general, ambulance posts and stretcher-party depôts are identical or close to each other, both services coming under the control of the medical officer of health The vehicles used will be mainly adapted small vans of the commercial type Simple stretcher-carrying fitments have been designed which the authorities will store in central depôts The Department of Health for Scotland has lately issued a circular (D.P, No 24) describing such fitments and recommending that their assembly should be part of the training of ambulance personnel.

Harveian Society of London

The annual Buckston Browne banquet was held at the Connaught Rooms on June 8, the official day of celebrating the King's birthday, and a cablegram was sent expressing the society's loyal devotion Two recipients of birthday honours were present in the person of Surgeon Vice-Admiral P T. Nicholls and Air-Vice-Marshal A V. J. Richardson Sir Buckston Browne was present as a quiet spectator of the good fellowship for which he was responsible. Dr. A. D Morris, medical superintendent of St Leonard's Hospital, who was in the chair, had as personal guests two other distinguished members of the L C.C. medical service, Sir Frederick Menzies and Dr H. W. Bruce Mr. Justice Humphreys, proposing the toast of The Society, recalled its foundation under the name of the Western London Medical Society and suggested that "as the society wouldn't go with that name," it was decided to associate the name of William Harvey, about whom he was expecting to hear something. As a lawyer Sir Travers was glad to observe the name of Dr. Marshall Hall among its founders. Societies of this kind were, he thought, of value not merely for acquiring knowledge but for giving opportunity to a scattered membership to meet each other. They began in 1856, he noted, to dine together. Dr. Morris, in his reply, explained that Mr. Tudor Edwards had delivered his Harveian lecture on bronchiectasis earlier in the day. He told the members of a scheme for providing a permanent home for the society. He did not name the sum asked for; had it not been for the energy of their treasurer, Mr. Cecil Wakeley, he would have been appalled at its amount Dr H. L. Glyn Hughes proposed The Visitors, coupled with the names of the Cardinal Archbishop of Westminster and Mr. G D. Roberts, K C, recorder of Exeter. In reply, Cardinal Hinsley spoke of the relation between his own work as a healer of the mind and that of the medical profession as healers of the body. Mr. Roberts also concluded his remarks with an allusion to the relief of human suffering. There were present in all 240 members and friends, and besides those mentioned the guests included the presidents of the Royal College of Surgeons, the British College of Obstetricians and Gynæcologists, the Royal Society of Medicine, the Medical Society of London, the Hunterian Society and the Chelsea Clinical Society, and the masters of the Society of Apothecaries and of the Barbers Company.

University of Glasgow

On June 20, at 4 15 P.M, Prof Grey Turner will deliver the fifth Macewen lecture in the university. He will speak on the Macewen outlook in surgery

Prof. J W Cook, F R S, has been appointed to the chair of chemistry in the university in succession to the late Prof George Barger Prof. Cook holds a chair of chemistry in the University of London and is research chemist to the Royal Cancer Hospital (Free), where he has made important observations on natural and synthetic carcinogenic and œstrogenic substances

St. Bartholomew's Hospital, London

The gardens on the roof of Derry and Toms's building adjoining Kensington High Street station, will be open from Monday, June 19, to Saturday, June 24, on behalf of the hospital. Nurses will be in attendance to receive donations of 1s and upward.

West London Medico-Chirurgical Society

The fifty-seventh annual dinner of this society will be held at the Trocadero Restaurant, London, W 1, on July 5 at 8 P.M. The guests will include Sir Robert Hutchison, P.R.C P., Mr. Hugh Lett, P.R.C.S., the medical director-general of the Royal Navy, the director-general of Army Medical Services, and the director of medical services of the Royal Air Force. Further information may be had from the hon. secretary, 34, Devonshire Place, W.1.

A Voluntary Hospital

The 111th anniversary of the Royal Sussex County Hospital, Brighton, on June 9, was the occasion of the inauguration of a mechanical respirator, the gift of Lord Nuffield, which was formally handed over by Prof R. R. Macintosh, and the establishment of the Mayo fellowship in anæsthetics Dr Donald Hall, chairman of the governors, presided, and his supporters included Lord Horder, who said the hospital seemed to him one of the best arguments for the continuance of the voluntary system As a pragmatist, he judged principles and institutions by the question, "Do they work?" Not only did this hospital work but it was an exciting and living example of democracy throughout its long life It was the result of a voluntary association of citizens and experts for their mutual protection against disease, and for raising the standard of the common health—which was even better than the common wealth If that hospital were the result of some other state's four-, or five-, or ten-year plan, they would be having relays of visitors from neighbouring states, with guides and interpreters, showing it off as a product of some incomparable system. But as the institution was merely the normal product of intelligence, of civic sense, and of enlightened self interest in an undramatically functioning democracy, it was left to people like himself to declare its merits

International Neurological Congress at Copenhagen

The congress will meet at the Rigsdag, Christiansborg Castle, on Monday, Aug. 21, and on the following Tuesday, Thursday, and Friday. The subjects for the three main sessions will be. the endocrine-vegetative system, the heredo-familial diseases; and the vitamin deficiencies. Papers on other subjects will be read at the Thursday session, when there will be a special section of neurosurgery; and on Wednesday excursions will be arranged to Frederiksborg Castle, Hillerød and Kronborg Castle at Elsinore The rapporteurs include Sir Henry Dale, F.R S, Sir Edward Mellanby, F R S, and Dr. C C Ungley.

Active membership is open to all neurologists, neurosurgeons, psychiatrists, and other medical men and women interested in neurology. Application must be made through one of the national committees—in this country through Dr Critchley at 137, Harley Street, W.1. Non-professional men and women are eligible for associate membership The subscription is a guinea for members and half a guinea for associates The congress is being held at the height of the tourist season in Copenhagen so that early application for hotel accommodation is advisable Bookings can only be made through a branch of the American Express Company

Tuberculosis Scholarship

The Royal College of Physicians of London propose to appoint an assistant part time scholar to coöperate in the work of the Prophit tuberculosis survey Further particulars will be found in our advertisement columns

National Union of Students

The third annual conference of representatives of medical student societies will be held in Leeds from July 11 to 14 The general subject for discussion will be the prospect for the newly qualified doctor The speakers will be Prof W MacAdam, Dr W S Macdonald Prof E J Wayne, Dr R Sutherland, and Lieut Colonel R B Price Further information may be had from the secretary, 3, Endsleigh Street London, W C 1

Cancer Prize

The first award from the Anna Fuller fund of New Haven, Connecticut, has been made to Prof Ernest Kennaway, F.R S, Prof J W Cook, F R S, Mr C L Hewett, Ph D, Mr I Hieger, Ph D, and Mr William Mayneord, D Sc, who are all workers in the research department of the Royal Cancer Hospital (Free), London The prize, which is worth about £1500, is awarded for a "real and outstanding contribution to knowledge on the subject of the cause, care, prevention or cure of cancer"

Medical Diary

June 19 to June 25

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W 1
THURSDAY
Dermatology 4 P M Dr S Berhman and Dr L Forman (1) Dermatomyositis Dr A D K Peters (2) Striæ Atrophicæ, ? Cushing's Syndrome Dr F Parkes Weber (3) Persistent Red Patches in Axillæ

MEDICO LEGAL SOCIETY
THURSDAY—8 30 P M Dr Denis Carroll The Psychiatric Treatment of Delinquents

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TAVISTOCK CLINIC Malet Place W C 1
MONDAY—6 P M, Dr Emanuel Miller Manifestation of the Early Psychoses in Children (1)
WEDNESDAY—3 P M Dr Cedric Shaw summary 4 30 P.M., Dr H Crichton Miller summary
THURSDAY—Dr Alan Maberly Disorders of Childhood—Sex Offences

ST MARY'S HOSPITAL, W 2
TUESDAY—5 P M (institute of pathology and research) Prof Wilfred Trotter F R S Has the Intellect a Function ?

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W 12
MONDAY—4 30 P M, Dr R C Wingfield Pulmonary Tuberculosis
WEDNESDAY.—Noon, clinical and pathological conference (medical) 2 P.M, Prof J H Dible Pathology of the Gastro intestinal Tract (II) 3 P M clinical and pathological conference (surgical) 4 30 P M Prof H W C Vines Pathology of the Adrenal Glands
THURSDAY—2 15 P.M Dr Duncan White radiological demonstration 3 30 P.M, Dr Helena Wright Birth Control
FRIDAY.—2 P M. clinical and pathological conference (obstetrics and gynæcology) 3 30 P.M., Mr J B Hume Hernia and its Treatment
Daily 10 A.M to 4 P M medical clinics surgical clinics and operations, obstetrical and gynæcological clinics and operations

HOSPITAL FOR SICK CHILDREN Great Ormond Street, W C 1
THURSDAY.—2 P M Mr James Crooks The Causes Recognition, and Treatment of Deafness in Childhood 3 P.M, Dr F A Cockayne The Von Gierke Niemann Pick, Gaucher and Schuller-Christian Syndromes
Outpatient clinics daily at 10 A M and ward visits at 2 P.M

ST GEORGE'S HOSPITAL S W 1
THURSDAY—5 P M Dr W S. Maclay psychiatric demonstration

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES W 9
THURSDAY—3 P M, Prof F L Golla clinical demonstration

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole Street W 1
MONDAY to SUNDAY—BROMPTON HOSPITAL S W 3 Tues and Fri or Mon and Thurs, 5 15 P M, M R C P course in chest diseases—LONDON CHEST HOSPITAL, Victoria Park, E 2 Wed and Fri 6 P M, M R C P course in heart and lung diseases—WEST END HOSPITAL FOR NERVOUS DISEASES Welbeck Street W 1 afternoon M R C P course in neurology—CHELSEA HOSPITAL FOR WOMEN, Arthur Street S W 3 all day course in gynæcology—PRESTON HALL, near Maidstone Kent Sat all-day demonstration on pulmonary tuberculosis—PRINCESS ELIZABETH OF YORK HOSPITAL, Shadwell, E 1, Sat and Sun all day course in children's diseases

SOUTH WEST LONDON POST GRADUATE ASSOCIATION
WEDNESDAY—3 P.M, visit to British Legion Village Preston Hall Maidstone Kent

HONYMAN GILLESPIE LECTURE, Edinburgh
THURSDAY—4 30 P.M (Royal Infirmary), Mr C F W Illingworth Recent Developments in the Surgical Treatment of Obstructive Jaundice

GLASGOW UNIVERSITY
TUESDAY—4 15 P.M Prof G Grey Turner The Macewen Outlook in Surgery (Macewen lecture)

Appointments

ALLISON A MAXWELL, L R C P E, assistant medical officer, Exeter City Mental Hospital

BARBOUR W J, M D Glasg D P M medical superintendent at the Borough Mental Hospital Derby

†BORG, CHARLES M D Malta resident medical officer at Richmond Infirmary, Surrey

COLLIS, J L M B Birm, F R C S resident surgical officer at the General Hospital, Birmingham.

*DAVIES, J R, M R C S D T M. & H assistant port medical officer of health for the City of London

EPSTEIN, EDWARD M B Witwatersrand, clinical assistant in the ophthalmic department of Sheffield Royal Infirmary

EVANS A B, M.B Camb, F R C S chief obstetric assistant and registrar to the Westminster Hospital

FORGACS PAUL M B Lond, assistant resident medical officer at the City Isolation Hospital, Plymouth

GRANT J K, M B Aberd, medical superintendent at the Renfrew District Asylum, Dykebar

HEALY, TIMOTHY, L R C P I, D P H, *assistant resident medical* officer at the North Wales Sanatorium Llangwyfan

KEELING, R. G M, M.B Camb, resident medical officer at the Hospital for Women, Soho

LAWRENCE, J S M.D Edin, clinical assistant in the dermatological department of the Sheffield Royal Infirmary

MACDONALD, N M, M B Glasg, D P.H senior school medical officer and deputy medical officer of health for Rotherham

MAIR, G B, M D Glasg, F R C S E., senior resident surgical officer at Warneford General Hospital Leamington Spa

*MORTON, WILLIAM, M D Glasg, deputy medical superintendent at Withington Hospital Manchester

ROBERTSON P A M L.R.C P E, junior assistant medical officer at Park Prewett Mental Hospital Basingstoke

RUSSELL JOHN, M B Glasg D P.M, medical superintendent, Exeter City Mental Hospital

*SAUNSBURY, EDWARD M B Manc., resident assistant medical officer at Withington Hospital Manchester

SINCLAIR, MOLLY K hon instructor for speech defects to St. Bartholomew's Hospital London.

WALTON, L. H F, M R.C.S, hon consulting physiotherapist to the department of physical medicine of the Hertford County Hospital

*WISHART G N M. M R.C.S D P H, assistant port medical officer of health for the City of London

WOOLMER R. F, B.M Oxfd, D.A, hon chief anæsthetic assistant and registrar

WRIGHT S L M D Lond, M R.C.P D P H, deputy medical officer of health for Wembley

Dufferin Association—The following appointments have been made to the Women's Medical Service for India:—
BROWN DORIS B, M D Leeds F R C S, M R C O G
CATCHATOOR M M B Punjab,
LONG HILARY, M B Lond, F R C S.
MENDIE Dr M B Punjab D O H,
NAIDU, Dr M B Punjab, D T M & H, M M S A and
VETHAVANAM, D C R. M B Madras, M R C P, D R C O G

Hospital for Sick Children Great Ormond Street, London:—
ALLIBONE, F C M D Leeds M R C P resident medical assistant and clinical pathologist
MILLER, H G, M B Durh, house physician,
PIERCE J W M B Lond M R C P, house-physician and
THOMSON D M, M D Manitoba, M R C S, house-surgeon

Colonial Medical Service—The following appointments are announced:—
CALDWELL, J McC, M B Dubl medical officer Uganda
GARROD, J M B, M.B Belf medical officer, Northern Rhodesia,
GRONIE G R, M B Glasg medical officer, Northern Rhodesia
LACHIE J J H M D, medical officer Cyprus.
MOLESWORTH B D, M B Camb, medical officer Malaya
ROGAN J M M B Edin, M R C P E medical officer Malaya
JONES L W C M B Edin senior medical officer, Tanganyika Territory
MACDONALD J F, M.B Edin, F R C S E, surgical specialist Northern Rhodesia
McGREGOR, J A M B Glasg, D P H, D T M senior medical officer, Northern Rhodesia and
ROBINSON P H, M B Dubl, D P H, D T M senior medical officer Northern Rhodesia

Examining Surgeons under the Factories Act 1937 Dr F [illegible] (Littleborough District, Lancashire)

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* Subject to confirmation.

† This appointment was given incorrectly in our issue of June 3.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Surgeon in charge of radium therapy, £800

Army Dental Corps—Commissions

Ashton-under-Lyne District Infirmary—H.S, at rate of £150

Barbados General Hosp—Radiologist, £800 Also H S and anæsthetist, £450

Battersea Borough Council—Deputy M O H and tuberculosis officer, £825

Bedfordshire County Council—Asst M O H, maternity and child welfare, £500

Birmingham City—Asst res M O in tuberculosis section, £450 Also jun asst M O. for Rubery Hill and Hollymoor Divisions, £350

Blackburn Royal Infirmary—Res H S, £175

Bradford, Infectious Diseases Hosps—Med supt, £850.

Bradford Royal Infirmary—Res M O and asst pathologist, £250 Res surg O, £250 Also H P to radium and skin depts, at rate of £200

Brighton County Borough—Sen M O and asst to M O H, £800 Also A M O for civil defence, £500

Bristol General Hosp—Cas H S, at rate of £100 Two H P's, three H S's, res obstet officer, and H S to spec depts, each at rate of £80

British Hosp for Functional, Mental and Nervous Disorders, 72, Camden Road, N W 1—Hon physician

British Postgraduate Medical School, Ducane Road, W.12—H S to surgical unit, at rate of £105

Canterbury, Kent and Canterbury Hosp—H S to special depts, at rate of £125

Cardiff Royal Infirmary—Radium registrar, £400 Also Hon physician

Cecile Booysen Clinic, 39, *Spencer Street, E C.1*—M O's, each 1½ guineas per session

Chelsea Hosp for Women, S W 3—Anæsthetist, 30 gns

Colchester, Essex County Hosp—H S, £175

Derbyshire County Council—Asst county M O H, £750

Derbyshire Education Committee—Asst school M O, £500

Dewsbury County Borough—Res asst M O in maternity and child welfare dept, £350

Durham County Council—Res med supt for School Aycliffe Colony, £800 Also asst school M O, £500

Elizabeth Garrett Anderson Hosp, Euston Road, N W 1—Hon first asst to obstetric dept Also H P, first, second and third H S, and obstetric asst, each at rate of £50

Gloucester, Barnwood House Hosp for Mental and Nervous Disorders—Second asst M O, £450

Golden Square Throat, Nose and Ear Hosp, W 1—Clin asst

Hastings, Royal East Sussex Hosp—Jun H S, at rate of £150

Hosp of St John and St Elizabeth, 60, *Grove End Road, N W.8*—Res H P, at rate of £100

Hosp for Tropical Diseases, 25, *Gordon Street, W C 1.*—Three H P's, each at rate of £120 Also ophthalmic surgeon

Hull, Beverley Road Institution—Asst M O, £350

Hull Municipal Maternity Home and Infants' Hosp—Jun res M O, at rate of £100

Hull Royal Infirmary—Hon gynæcologist

Ilford, King George Hosp—Med reg, £150 Also asst cas O and H S to spec depts, at rate of £100

Lancashire County Council—Asst county M O, £800

Leigh Infirmary, Lancs—Jun H S, at rate of £150

Lincoln City—Res M O for City Hosp and Sanatorium, £300

Lincolnshire Joint Board for the Mentally Defective—Asst M O, £400

Liverpool, Alder Hey Hosp—Res asst M O's, each at rate of £200

Liverpool City—Res asst M O's for Walton Hosp, Smithdown Road Hosp, and Mill Road Infirmary, each £200

Liverpool Hosp for Consumption and Diseases of the Chest, Mount Pleasant—Res M O, £150

Liverpool Sanatorium, Delamere Forest, Frodsham—Asst. to med supt, £225

London County Council.—Asst M O's (class I), each £350 Asst M O's (class II), each £250 Also part-time M O for Ongar residential school, at rate of £130

London Hosp, E 1—Medical first asst. and registrar, £300 Also Medical outpatient first asst, £150

Manchester Royal Children's Hosp, Pendlebury—Res H S, at rate of £100

Manchester Royal Infirmary—Radiologist for X-ray diagnostic work, £1000

Middlesex County Council—Appointments, £650 to 3 guineas a week

Montrose Royal Asylum—Third asst M O, £300

Nelson Hosp, Merton, S W 20—Res H S, at rate of £150

Newcastle-upon-Tyne, Royal Victoria Infirmary—Jun surg reg, £150 Also res appointments, at rate of £200 to £50

Newcastle-on-Tyne Throat, Nose and Ear Hosp—H S, £150

Norwich, Norfolk and Norwich Hosp—H P and H S, each £120

Oxford, Radcliffe Infirmary—Hon asst obstetrician and gynæcologist Also hon asst surgeon to ear, nose and throat dept

Oxford, Wingfield-Morris Orthopædic Hosp—Lord Nuffield scholarship in orthopædic surgery, £200 Also res H S, at rate of £100 to £120

Plymouth, Prince of Wales's Hosp, Greenbank Road—Res surg O, at rate of £225

Princess Elizabeth of York Hosp for Children, Shadwell, E 1—Cas O, at rate of £125

Radium Institute and Mount Vernon Hosp, 1, *Riding House Street W 1*—H S for Mount Vernon Hosp, at rate of £150

Reading, Royal Berkshire Hosp—Hon asst anæsthetist

Rochdale Infirmary and Dispensary—Sen H S, £200

Rotherham, Municipal General Hosp—Jun asst res M.O, £180

Rotherham Hosp—Cas H S, £150

Royal Army Medical Corps—Temporary commissions

Royal Chest Hosp, City Road, E C 1.—H P, at rate of [illegible]

Royal College of Physicians, Pall Mall East, S W 1—Asst. [illegible] scholar, £250

Royal London Ophthalmic Hosp, City Road, E C 1—Path[illegible] and curator, £650 Also Outpatient officer, £150

Royal Naval Medical Service—Medical officers

St John's Hosp, Lewisham, S E 13—Res cas O and [illegible] second H S, each at rate of £100

St. Mark's Hosp for Cancer, &c, City Road, E C 1.—H S, [illegible] rate of £120

St Mary's Hosp for Women and Children, Plaistow, E 13—Res H P., at rate of £150

St Thomas's Hosp, S E 1—Hon neuro surgeon

Salford City—Asst M O for V D treatment centre, £5[illegible]

Sheffield Children's Hosp—H P, £100

Sheffield Royal Infirmary and Hosp, Dept of Radiology—[illegible] asst, £500 Also clin asst, £300.

Stamford, Rutland and General Infirmary—H S, at rate of [illegible]

Sunderland Royal Infirmary—Cas O and H S to ear, [illegible] throat dept, at rate of £120

Thorp Arch, Yorks, Marguerite Hepton Orthopædic Hosp—[illegible] supt, £700

University College Hosp Medical School, W C.1—[illegible] Crocker travelling scholarship in dermatology, £[illegible]

Wakefield, Wadsley Mental Hosp—Asst M O, £350

Walsall General Hosp—Res surg O, £300 Also H S, £[illegible]

West London Hosp, Hammersmith, W 6—Chief clin. [illegible] X-ray (diagnostic) dept, £125

Westminster Hosp, St John's Gardens, S W 1—Res [illegible] anæsthetist and res H S to irradiation dept., each at [illegible] of £50

Willesden General Hosp, Harlesden Road, N W 10—Cas O, at rate of £100

Windsor, King Edward VII Hosp—H S, £120

Woolwich and District War Memorial Hosp, Shooter's [illegible] *S E 18*—Cas O, at rate of £100

York County Hosp—H S to eye, ear, nose and throat dept., £1[illegible]

The Chief Inspector of Factories announces vacancies [illegible] Examining Factory Surgeons at Kegworth (D[illegible], Ruskington (Lincoln), Kilmory (Bute) and Cowes (Coun[illegible] of Southampton)

Births, Marriages and Deaths

BIRTHS

ALDERSON—On June 8, at Hull, the wife of Dr Frank [illegible] Seaforth Alderson—a son

BINNING—On June 9, at Hove, the wife of Dr Rex [illegible]—a daughter

CRAIG—On June 12, at High Wycombe, the wife of Mr J Murison Craig, F R C S—a son

HODGKINSON—On June 10, at Milford on-Sea, Hants, [illegible] wife of Dr H Ll Hodgkinson—a son

MACGREGOR—On June 9, at Welbeck Street, W 1, the [illegible] of Dr Alexander Brittan MacGregor—a daughter

MOYNAHAN—On June 8, at Royal Northern Hospital, Lon[illegible] the wife of Dr Edmund Moynahan—a son

RUGG-GUNN—On June 12, the wife of Surgeon Lieute[illegible] M A Rugg-Gunn, of Rainham, Kent—a son.

SHACKEL—On June 6, at Mayfield, Sussex, the wife of [illegible] Edward M Shackel—a son

VINCENT SMITH—On June 11, at Hendon, the wife of Sur[illegible] Lieut-Commander John Vincent Smith, R N—a son.

MARRIAGES

BERRY—HOLME—On May 24, at Fort Johnston, [illegible] William Thomas Charles Berry, M R.C S, of [illegible] Wells, to Veronica Anne Holme

BURKITT—BAMBRIDGE—On June 9, at St Mary's, Wim[illegible] Frederick Thomas Burkitt, M D, to Kathleen Bam[illegible]

GEE—JAQUES—On June 11, at Union Church, Hutton, [illegible] Arthur Cecil Gee, M B, to Marjory Beryl Jaques

MARTIN—NORBURY—On June 10, at All Souls' [illegible] Langham Place, Nicholas Henry Martin, M R C P, [illegible] Joan Sybil Norbury

TALBOT—VAN KLAVEREN—On June 3, at St Andrew's [illegible] Hadham, John Edmund Talbot, M R C S, to Joan [illegible] Bickmore van Klaveren.

DEATHS

CASSIDI.—On June 13, at Magherafelt, co Londonderry, [illegible] Richard Cassidi, M B E, M.D Dubl, J P, late of [illegible]

HERN—On June 9, at Beaconsfield, Bucks, William [illegible] O B E, M R C S, L D S, late consulting dental [illegible] to Middlesex Hospital, in his 83rd year

HUBBERSTY—On June 13, at Sunderland, Robert [illegible] Hubbersty, M D Edin, aged 77

HULKE—On June 10, at Hungerford, Sydney [illegible] Hulke, F R.C S, late of The Croft, Walmer

LEWTAS—On June 6, at Banstead, Surrey, Frederick [illegible] Lewtas, M.R C S, aged 48

MCCALL-SMITH—On June 9, N McCall-Smith, M.D [illegible] of Ash, Canterbury, Kent

MCKENZIE—On June 1, at Durban, S Africa, Arc[illegible] McKenzie, M D Edin, M R C S, aged 81

MAGUIRE—On June 13, in London, Charles Evans [illegible] M.D Aberd, of Auckland, N Z

SEYMOUR—On June 7, at Harley Street, W.1, Fran[illegible] Seymour, M D Dubl, D P H

N B—A fee of 7s 6d is charged for the announcement of B[illegible] Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A UNIQUE MEDICAL TRACT

AT Sotheby's sale of the late Earl of Dysart's Ham House library this year the British Museum has acquired, through the Friends of the National Libraries, a unique early medical tract "The Ouerthrow of the Gout written in Latin verse by Doctor Christopher Balista," translated into English verse by B G under the imprint of Abraham Veale, London, 1577 The identity of the poet hidden behind the initials B G is not certain The 1890 edition of the "Dictionary of National Biography" says that this work was doubtfully assigned to Barnabe Googe author of "Eglogs, Epytaphes, and Sonettes," published in 1503 The initials may conceal Bernard Garter, who flourished in the same period. Richard Master, to whom the Ouerthrow of the Gout is dedicated, was Queen Elizabeth's physician and prebendary of York, combining the cure of bodies with that of souls, he was president of the College of Physicians in 1561 He also acquired malaria in Kent in 1519—a quartan ague that lasted three months Almost nothing is known of Dr Christopher Balista, alias Arbaleste, author of the Latin original, "In Podagram Concertatio" He is supposed to have been a Parisian doctor and the author of five medical works

The Ouerthrow of the Gout is described by H Sellers in the *British Museum Quarterly* (February, 1939, p 7) The causes of gout are *first enumerated*, including "colde, excessive Idlenes, and to much *exercise*", "thick and clammy flemme", "both the sortes of Choler", and "tomuch blood" Many herbal, mineral, and animal remedies are mentioned, including "the root of marsh mallowes mingled with Ducks greace" and 'a Fox fleaed (flayed) cut in small Gobbits destilled with Oile of Camomile, Oile of Rew, *oile of* wormes" Elaborate directions are given about diet, and cheerfulness is advised

> "Far from thee look thou euer haue
> all grim and sollemne Syers,
> All lowring lumpish lookes that lothe,
> bequeath them to the Fryers

A short Dialogue betwixt the Gout and Dr Balista ends the book, which is known only from the present well preserved copy

LABOUR LASTING 182 HOURS

DELAY in the first stage of labour is attributed to various causes—notably emotional disturbance, over-distension of the bladder or the rectum over-distension of the uterus, malpresentation, and cervical rigidity The last of these is the rarest and, if not treated, may lead to rupture of the uterus The treatment recommended by Chassar Moir in the British Encyclopædia of Medical Practice (vol. vii, p 446) is incision; others have advised manual dilatation under spinal anæsthesia Neither of these methods was used by Ramirez Olivella in a case of tedious labour lasting 182 hours in a primigravid European, aged 28, in Cuba (*Vida nueva*, Feb 15, 1939, p 102)

She was admitted to a maternity hospital on Oct 11, with commencing dilatation (two finger-breadths) and feeble contractions There was a normal bag of waters, the fœtal head *had not* engaged, and the sacral promontory could not be felt On the next day the head was said to have engaged and the cervix to be somewhat rigid, whereupon an antispasmodic was injected On the 13th the dilatation had increased to three finger breadths and the edge of the os had become thinner On the 15th dilatation had not advanced any further, the head was engaged low down, and the membranes ruptured spontaneously. Contractions were still feeble and widely spaced Another injection *of antispasmodic* was given Later on the same day dilatation increased slightly, and yet another injection of antispasmodic was given During the 16th and 17th the dilatation gradually increased as the rigidity lessened The patient slept well and did not appear to be suffering from fatigue, although she complained of the length of her labour By that night it was estimated that dilatation was almost complete, on the 18th it was considered to be complete, and later in the day a healthy male child was born with the aid of low forceps

A WOMAN'S MAN

AMONG the latest recruits to the rapidly growing army of medical autobiographers is Dr Frederic Loomis, who practises gynæcology and obstetrics in California (Consulting room London J M Dent 1939 Pp 270 8s 0d) Ambition to become a doctor came early, for it impelled him at the age of eight to dose the domestic cat with nauseous draughts of his own decocting Although, for economic reasons, his ambition was not realised till comparatively late in life, his enthusiasm persisted and, qualified at last, he immediately began to specialise "My world," he says, "has revolved round sex as a pivot, with love as a motive power," and if his manner of presentation grates perhaps a trifle melodramatically on English ears, he has no dearth of good stories to tell—some grave, some gay, but all intensely human His accounts of youthful solecisms and misunderstandings are particularly happy, and such phrases as "Honeymoons, like autos, last longer if you don't race the engine" reveal a gift for epigram. It would be idle to deny that Dr Loomis is a sentimentalist—he himself probably glories in the fact—but his candour, *vigour and* humour *more than* offset the tendency to mawkishness in his book.

ANATOMY OF HERNIÆ

IN connexion with the injection treatment of hernia, Dr A Katchian of Beirout asks what relationship the sac in oblique inguinal hernia bears to the cord at the internal ring, in the inguinal canal, at the external ring and in the scrotum, and whether the relationship is constant in all cases Books on surgical pathology and even the newer publications on the injection treatment of hernia shed, he says, little or no light on this question

Textbooks certainly show a regrettable tendency to beg this question, and an intimate knowledge of the anatomy of hernia is essential if injection treatment is to be safe and successful In oblique herniæ the sac lies outside and slightly above the cord at the internal abdominal ring, in the inguinal canal the cord is adherent to the posterior surface of the sac; at the external abdominal ring the sac lies outside and slightly below the cord, and in the scrotum the sac is outside and in front of the cord In the common type of oblique herniæ the relationship is probably constant Variation may be found in children and, of course, in acquired and recurrent herniæ in adults.

SHORT STORIES FOR DOCTORS

THE 23 articles and short stories in Dr Cecil Learoyd's "Physicians' Fare" (London Edward Arnold 1939, pp 301, 7s 6d) all have a medical flavour, and, being written by a practising doctor, they are refreshingly free from those tiresome inaccuracies of medical detail which are all too common in books written by laymen The stories cover a wide range of subjects, including murder, suicide, the past, the future and the hereafter Among the best is "A Day in the Life of a Psychologist," though the musings of old Dr Graver of Market Citron in "A Five-Minutes' Interlude" and elsewhere run it pretty close Written in fluent style, the book is well seasoned with astringent humour and the title is aptly chosen for it is essentially a book for doctors The author does not mince his words, and all but the least squeamish of extra-professional readers will find them strong meat.

ART AND ANATOMY

THE intimate relationship between art and anatomy is surely self-evident and Prof. R. N. Wegner of Frankfurt-am-Main need hardly have urged its importance in the introduction to his "Das Anatomenbildnis" (Basel: Benno Schwabe and Co. 1939. Pp. 199. Sw. Fr. 18). He needs no excuse for so scholarly a production, for the text evinces on every page a high standard of research, and the admirably reproduced illustrations, culled from a great variety of sources, reflect the artistic taste of their selector. It is natural to look in these portraits for some clue to the personalities of their subjects. Some of course are mainly of interest as examples of the art of portraiture, but we seem to trace in these pages a kindliness, a courtesy and a "humanity" which we should not find in a series of statesmen, warriors or kings. Science, it seems, is justified of her children. Of the pictures which will be new to most readers, the palm must be given as a work of art to the magnificent portrait of Jan Bleuland by Pieter Wonder, the treasured possession of the University of Utrecht. But the reproduction which charms by its "humanity" is the engraving of Du Laurens; it convinces us at a glance that Du Laurens was in every sense a great gentleman.

SULPHANILAMIDE IN SMALLPOX

IN our issue of March 25 (p. 740) mention was made of a case of smallpox successfully treated with Prontosil rubrum by King and de Rozario. Now comes news of four cases treated with sulphanilamide by W. O. McCammon of Kentucky (*J. Amer. med. Ass.* May 13, 1939, p. 1936). Three other cases in the same outbreak received symptomatic treatment only, all seven being of similar onset and prodromal period. Treatment in each case was begun before an eruption appeared, and in those treated with sulphanilamide there were only evanescent macules and no pustules, except for three pustules in one of them. Typical pustulation was seen in the cases treated symptomatically. The patients who received sulphanilamide were back at work about a week earlier than the other patients. In other respects there was apparently no difference in the course of the fever in the two sets of patients.

MIGRATION, ENVIRONMENT AND EVOLUTION

IN an exhaustive study, an account of which has recently been issued under the auspices of the University of Hawaii,[1] Prof. Shapiro has sought to measure the effects that a change of environment may have on the physical characteristics of a migrating population and their descendants His field of inquiry has been Hawaii, but, with the support of its university and of the Rockefeller Foundation, he has pursued his investigations not only amongst the Japanese immigrants to Hawaii, and amongst their offspring born and bred there, but also, for comparison, amongst members of the families and villages in Japan from which the immigrants came in early manhood. The field work, carried out by Dr. Hulse, included some 43 anthropometric measurements (with 21 indices calculated from them) and 41 observations of such characters as hair and eye colour, and slope and height of forehead. From this material, relating in all to 2594 individuals and presented in nearly 400 pages of tables, Shapiro finds initially that the migrating population differs in most respects from its stay-at-home relations. They have, to quote one or two instances, shorter trunks and longer legs, longer noses and wider shoulders Whatever may be the cause, the migrating population is physically not a random sample of the families from which it sprang—a result which is not altogether unexpected Rather more surprising is the further observation that their children, born and reared in Hawaii, seem to undergo further modifications in measurable (but not in qualitative) characters. They differ in many respects both from their parent stock and from their relatives in Japan. In other words, environmental influences have, it seems, produced physical changes within a single generation. This leads Shapiro to the conclusion that selective migration and environmental modifications may well be contributory factors in the complex process of differentiation and evolution.

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[1] Migration and Environment. By H L Shapiro, with the field assistance of Frederick S Hulse London Humphrey Milford, Oxford University Press 1939 Pp 592 32*s* 6*d*

A BIOLOGICAL DICTIONARY

THE title of "A Dictionary of Scientific Terms," originally prepared by I. F and W. D Henderson and now revised by J. H. Kenneth (London. Oliver and Boyd. Pp. 383. 16*s*.), is misleading, for it covers only the biological sciences—botany, zoology, *anatomy, cytology, embryology* and physiology. Within these limits, however, it does its job well though in some of the definitions clarity has been sacrificed to brevity and polysyllables have been preferred to their shorter equivalents. Pronunciation and spelling are those generally accepted in this country. The medical man will not find answers here to all the conundrums he meets in his reading but it is perhaps just in these sciences that border on medicine that he most needs guidance.

PLAY AS TREATMENT[1]

Dr. Rogerson, who has studied children at play at a child-guidance clinic, is sceptical of the value for children of such lengthy forms of treatment as psycho-analysis and of interpretative techniques deduced from adult analysis. His work confirms *the therapeutic effect of play under certain* controlled conditions, which he describes, upon difficult children. He lays insufficient stress, perhaps, on the variation in reactions; some children are undoubtedly able to work through their difficulties adequately in a play group, while others need long and intensive treatment. Dr. Rogerson does less than justice to other forms of treatment of proven value and moreover leaves rather doubtful his criteria for estimating recovery. For example one child at the time of discharge is described as a "normal though very aggressive little boy" without any suggestion that excessive aggression may lead to further trouble. A close examination of the clinical material given in this little book reveals some inconsistencies, and other workers in this difficult field may find the author a little too optimistic.

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[1] Play Therapy in Childhood By C H Rogerson, M.D Lond., M R C.P., D P M, medical director, the Cassel Hospital, Penshurst, Kent, late chief clinical assistant, department of psychological medicine, Guy's Hospital, London: Humphrey Milford, Oxford University Press 1939 Pp. 63 3*s* 6*d*

"When a hen has laid eggs for the first time in her life she immediately sits on them . . . Hitherto science has called this a typical example of animal instinct. What is the real truth of the matter? Careful investigation has proved that the animal certainly has personal motives for sitting, but they are not biological ones Shortly before the beginning of hatching-time the animal's breast shows the so-called hatching spot. Here the feathers fall out and there is a bald spot which feels hot, as if from fever. This inflammation (probably caused by hormones) evidently causes the animal pain, for it seeks cooling substances, which must necessarily have a curved surface to be effective *After the eggs have been laid*, these effect what is required. . . The hen turns the eggs so that she may sit on the cool parts, and without meaning to do it she thus causes all parts of the egg to be equally warmed . . . I must once more state emphatically that the instinct hypothesis is in direct contradiction to every result of the modern theory of heredity. It has been proven again and again that only a certain disposition to react to impressions on one hand, and to general emotional attitude and bent of mind on the other is *inherited*; for example a profoundly emotional nature or a generally intellectual disposition"—Prof J A LOESER, *Nature, Lond.* [illegible] 1939, p 880

ADDRESSES AND ORIGINAL ARTICLES

HAS THE INTELLECT A FUNCTION?*

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THERE is no aspiration more commonly expressed by conscientious teachers than that they should be able to give their pupils the power to think for themselves This ambition seems so innocent and laudable that we are apt to let it pass without examining its merits as a practical proposition *If* we do *look* at it closely in that light we cannot fail to notice certain unexpected features about it One is that those who propose to confer this great gift of free thought often manifest but little of that activity themselves A second is that when a pupil does by chance show some evidence of individual thinking the teacher himself is apt to seem a little disconcerted, but perhaps the oddest thing that is noticeable in these good intentions is a reticence about how they are to be carried out Pupils are to be taught to think *for* themselves but how it is to be done is withheld from us

I have produced this little problem merely as an introductory note Before passing on however we may extract from it a more general reference We have before us the assumption that the exercise of thinking—and especially of independent thinking—is beyond all question good and desirable But we also find that this approval is not in practice so wholly unqualified as seems at first to appear I have called to mind the fact that in the rare case of a pupil developing independence of thought even the teacher is apt to show as a little taken aback We have the hint, then, that our general applause for thinking is not without an eye on what is thought, that when we urge the young to think for themselves we are inclined to be disappointed if they do not think like us At the climax of "Mansfield Park" we become aware of some anxiety lest the amiable inertia of Lady Bertram should prevent her reacting to the elopement of her married daughter with the proper *indignation* We are reassured however by this remark of the author "Lady Bertram did not think deeply but, guided by Sir Thomas, she thought justly on all *important* points." It is to be feared that when we desire our pupils to think for themselves our anxiety is not so much that they should think deeply as that they should think justly on all important points

THE PROBLEM ITSELF

These trivial preliminary reflections serve to bring us without undue abruptness into the presence of our actual problem, which is the behaviour of the faculty of reason in man Without pausing here to fidget with definitions it is necessary to say that I use this expression—faculty of reason—which is now so old fashioned as to be practically out of work to denote in a broad rough way the capacities in which man differs from the other animals Now the faculty of reason in one aspect may be said to be the indispensable agent in everything man has accomplished It enables him to learn to add knowledge to knowledge and preserve it to build up arts, sciences, and civilisations without limit Yet, in another aspect this same implement can as it were turn in his hand and become the enemy of all constructive activities With its Ptolemaic systems, caloric fluids and phlogiston theories, reason has been deleterious enough even in the quiet fields of science It taught astronomers that planetary orbits are circular because the circle is the perfect curve, it proved that the number of planets could be no more than seven and enabled Hegel to deride the none the less successful search for an eighth by Adams and Le Verrier, and even today it probably exercises over free experiment a quiet censorship far stronger than most of us would like to admit

The history of medicine teaches us that when reason took a hand *there* it was not only truth that suffered The rational *system* of a Stahl, a Brown, a Rush or a Broussais unfortunately did not exist in a mere metaphysical vacuum but at the bedside—and armed with opium, antimony, alcohol, mercury, the lancet and the purge Thus the consequences of the confident use of reason in medicine have been gloomy enough When the same implement has been applied to the general affairs of life the results have been even more dreadful Few proscriptions, persecutions and massacres but have had their reasoned and logical justification The various systems of doctrine that have held dominion over man have been demonstrated to be true beyond all question by rationalists of such power—to name only the greatest—as Aquinas and Calvin and Hegel and Marx Guided by these master hands the intellect has shown itself more deadly than cholera or bubonic plague and far more cruel It is a strange fact that this pestilential virulence of reason has never fired the ambition of some great sanitarian of the mind. The incompatibility with one another of all the great systems of doctrine might surely have been expected to provoke some curiosity about their nature

ACCEPTED SOLUTIONS

These few random instances should be enough to enforce what is after all a very old discovery The things that come into the mind have a disarming air of obviousness and certainty But it must have been known at a very early period that they are not to be taken for what they seem without some corrective test of their validity, and some other authentication than their own charm

In the age long struggle with this problem no solution has been found that has been able to make human reason a universally applicable and generally trustworthy implement Nevertheless something has come out of the struggle This has been the evolution of three methods of setting about the pursuit of knowledge They are not sharply marked off from one another and tend a good deal to overlap the limits one may be tempted to define for them They do however clearly differ in the aspect of their task on which each lays its chief emphasis Of these three methods the first is that of the practical art, which is mainly directed to the preservation of knowledge the *second* is that *of the natural sciences* which is directed to the increase of verifiable knowledge and the third is that of philosophy, which seeks the unification of knowledge The objects then of these three attitudes towards experience—the rewards of man's struggle for intellectual discipline—are respectively to preserve, to verify, and to unite What their success has been we may now inquire

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* A lecture given at the Institute of Pathology St Mary's Hospital, on June 20

THE METHOD OF THE PRACTICAL ART

The method of the practical art is that of the carpenter, the farmer, the builder, the doctor; it has of course as such nothing to do with the plastic arts and the æsthetic, but it may well excite our reverence as perhaps embodying the fundamental intellectual discovery on which all civilisations have been built up. Its primary interests have always been the preservation and transmission of knowledge rather than its discovery. These characters have made it the nurse of civilisation at a time when a new discovery could survive only by being fixed in the tradition of an art. A practical art comes then in its very nature to be strongly conservative, reluctant to accept the new, still more reluctant to give up the old; it will teach by precept and example of the master, by apprenticeship; it will embody its lore in traditional dogma and in rule of thumb. Its ideal of success will thus be fulfilled as much by a given course of conduct having been correctly carried out as by its object having been attained. If he knows that he has proceeded *secundum artem* the practitioner will not be greatly distressed by a mere lack of success; and will readily blame the weather for the failure of his crop, the materials for the collapse of his building and his patients' constitutions for their diseases.

The extended reasoning process has little function in the practical arts. If allowed to enter them it finds itself in an environment possessing no indigenous methods of controlling it and is apt to develop a harmful exuberance. Nothing could illustrate this principle better than the speculative systems that devastated the medicine of the eighteenth and early nineteenth centuries in the way I have already referred to. To maintain its health a practical art must be sparing of theory and keep closely in contact with facts. It has no method of discovery other than that of almost purely random trial and error; it has no characteristic method of proof and can assimilate truth only when the prestige of its discoverer is great. For example Steinhaeuser might discover in 1840, and Hughes Bennett proclaim, that cod-liver oil cures rickets, but this enormously important fact remained unproved and no more than a not very respectable pious opinion for the next 80 years.

THE METHOD OF THE NATURAL SCIENCES

The second of what I have called the three methods of setting about the pursuit of knowledge is that of the natural sciences. We need not attempt a complete definition of natural science and if we were to try we should find that its margins tend to grow indistinct as we concentrate on them. A perfectly adequate practical definition is the statement that its central function is to acquire verifiable knowledge. A verifiable fact is one that has shown itself to have a relation to certain definable conditions such that wherever and whenever the conditions have been reproduced the fact in question has always accompanied them. Such verification is the characteristic and only sanction of science. Whether we like a given fact or not, and whether it seems true or revolts our reason, are quite irrelevant to its scientific validity.

All knowledge comes from noticing resemblances and recurrences in the events that happen around us. Although some of us may be much quicker than others in the power of seeing and comparing, it is obvious that the greatest talent cannot carry us very far as long as observation and experiment is applied only to random experience. It is the discovery of natural science that experience can be simplified so that on the one hand resemblances and recurrences in events can be more easily seen, and on the other that the conditions in which they occur can be completely specified. This, using the term in the broadest sense, is the experimental method. In one aspect it may be regarded as a mere refinement of the rough and ready trial and error of the craftsman and the common man. In another aspect however the change is so great as to be virtually a qualitative one and to make the method distinct from all others. It is not necessary to dilate here on the power it has displayed in advancing knowledge or the huge acceleration it has imparted to that process. It is more relevant to note the limits to which its application is subject. The scientific method is unfitted to tackle directly the turbulent stream of everyday experience and common affairs; it must run off minute fractions of it into carefully specified and engineered channels before it can bring its powers to bear. Thus for example the work of social government is not as such directly accessible to it on account of the jumbled miscellaneity of the matters involved.

In saying this I must guard myself against being thought to pronounce on a wholly different question which might be supposed to be similar. It is of course obvious that governments now existing fail to make use of much knowledge already established by science and capable of immediate application. Even however if this deplorable lag could be abolished, the direct application of scientific method to government itself as a whole would, with our present powers, be impossible.

After what has been to some extent a digression we pick up the line of our argument again when we ask ourselves what part in the scientific method is taken by what I have called the extended reasoning process. The history of science is generally supposed to furnish a wonderful display of the triumphs of human reason. I must confess that the reading of it does not induce in me any such grandiose conceptions of the mind. The separate steps of progress have rarely been much prepared for by long flights of rational forecast. Great investigators seem mostly to have been led from fact to fact; to have depended on a kind of intuitive flair for the behaviour of their material; and to have used reasoning rather for the planning of their work and the design of experiments than for elaborate structures of argument.

Although rational and imaginative speculation is of the greatest general value to science in keeping it from going dry and orthodox, as an actual implement of research it has not very much to its credit. Experience has shown time and again that as soon as science leaves immediate contact with the facts it begins to lose direction and reality, and must constantly return to them for orientation. Great discoveries will therefore continue to be unexpected and the advance of science occur on an irregular front in which the salients mark the places where amongst the facts the going is good. Even research deliberately directed against short-range targets is apt to be held up contrary to all reasonable expectation or to score its successes through unintentional deflections. In the light of these considerations we may contemplate with benefit the bitter war of attrition that has marked the enormous and world-wide attack on cancer; or remember Rayleigh setting out to determine the atomic weight of nitrogen and oming up against argon, or Holst and Fröhlich tting out to study beriberi and finding the cause scurvy We thus seem to get the plain hint of rather odd conclusion It is that natural science—y far the most successful of man's inventions for tting about the pursuit of knowledge—has not been ble to make any extended use of the directive culty of reason If we were to allow the sceptical irit full liberty for a moment, we might find our-lves wondering whether the vast mass of scientific nowledge has not in some queer way invented self—a suggestion that makes it seemly to change e subject

THE METHOD OF PHILOSOPHY

The third method of setting about the pursuit of nowledge is that of philosophy We may content urselves here by defining philosophy no more closely han to say it has for its central object the search or unification or less summarily the effort to bring ll knowledge whatever into a single consistent scheme Ve have perhaps been a little disconcerted at finding urselves able at least to defend the view that the ational activities of the mind have played no over-helming part in the practical arts or the natural ciences We shall not have that fault—if it is a fault—to find with philosophy

As far as history is able to tell us the deliberate se of rational thought as an implement of research as invented by the Greeks of classical times some 500 years or more ago It is difficult to think of ow as a definite discovery and to call it such sounds ike calling locomotion or digestion a discovery Nevertheless it was a true discovery and produced real deflection in the strange roads of human destiny We can call a discovery great when it catches man nprepared, and we find in the history of many such he evidence of man's unpreparedness in the way e has tended to mix the use and misuse of hese gifts Rational thought in the pursuit of nowledge bears these marks of mixed use and nisuse as plainly as do printing, gunpowder and the nternal combustion engine

This new implement was to impel intellectual activity into a course it was to follow for two and a alf millenia We may therefore well ask ourselves what precisely was the device that could exercise so strong an influence It was abstract thought At that name of power we find ourselves at last compelled to devise an exact definition

The discovery that was made by the Greek, and that we may fairly say intoxicated him, was that you can consider the qualities of things apart from the things themselves. You survey, let us suppose, a miscellaneous collection of objects, untidy and with no coherent meaning Suddenly you notice that they possess in common some such quality as hardness or colour or weight, and that you can think of this as existing apart from the disorderly mess you are looking at A new thing has appeared—an abstraction—having an existence of its own and superior to the accidents of the apparent world You find that these abstractions are easy to think about They are clear shapely and can be depended on to stay where you put them You can consider their relations to one another at your ease without being bothered by odd and "insignificant" individualities No wonder its discoverers were enchanted by this method of introducing order and seemliness into the chaos of experience and that they exploited it to excess

A good deal of mystery has been made of the fact that the Greeks, with all their curiosity and liveliness of mind, turned away so obstinately from the immediate study of nature Even Aristotle was rather contemptuous of direct observation and experiment, and Plato says somewhere concerning the study of natural phenomena, "these things have no absolute first principle and can never be the objects of reason and true science" The mystery seems to me rather artificial The Greeks despised the mere pedestrian grubbing among facts because they had discovered something superior to it In the abstract world they had found a better kind of reality—orderly, clean, unaccidental, and capable of being successfully manipulated without soiling a gentleman's fingers or compromising his dignity.

It must be admitted fully that the abstract method is ineradicably entwined in all our thinking and is indispensable This is however by no means to acquiesce in its universal dominance or to excuse the general failure to examine sceptically its nature and limitations

The charm and the use of the method are that it permits us to take into our minds phenomena in their essence only, to examine them there and as it were acquire experience of them without being distracted by their mere individual oddities The abstraction "space" thus comes to represent a certain common quality of innumerable experiences in the world of corners, surfaces, heights, depths and breadths Vertebrate, amphibian, man are the well-behaved substitutes of countless creatures creeping, jumping, and running about the world in their odd unaccountable way This process of abstracting what I have rather light heartedly called the essence of phenomena, will be found to reward a rather closer attention and such attention may well be directed first to the simplest case of the process

Remarkably little attention seems to have been given to the important fact that the only quality we know of which can be *completely* abstracted is number Five digits in the mind are, as regards number, as good as five fingers of the hand Every numerical experience of them and every such manifestation of them that is possible in the outer world can be imitated or repeated in the mind and with equal validity The science of positive numbers is then the science which is at once perfectly abstract and perfectly experimental The moment we leave number there begins to appear a decline in the exactitude of the correspondence between the abstraction and the reality For a long time it seemed that the qualities of space could also be completely abstracted because the conclusions derived from the abstract consideration of space seemed to be confirmed everywhere in the outer world even on the astronomical scale Ultimately however it dawned on the geometers that there is a discrepancy between the abstraction and the reality. The need of an Einstein to point this out and the uproar that followed are perhaps a little surprising to mere common sense What seems truly remarkable is not that intuitions derived from the stretch of the arms and the range of the eye should ultimately break down, but that their validity is so wide and their error so small

When we apply the abstract method to events of the living world as we constantly do and must, we find ourselves faced by a great increase in the individuality of phenomena and should be prepared for a sudden drop in the representative value of all abstractions The abstraction "man" must always be a thin, imperfect, and easily misleading summary of the innumerable individual "men" It is in the world of ideas however that the abstract makes its highest flights and develops to the full its fascinations and its dangers. Truth, justice, honour, beauty, being, right, wrong: I give a mere random list of abstractions from that world. These are no mere manageable equivalents designed for convenience of thought. They are creations which, made in all innocence, have taken on a life of their own and become the rulers of the mind Could there be a more plausible and useful-looking conception than that of "truth"—a unitary principle that is to be the ultimate sanction at once of the statesman and the theologian, the man of science and the poet? Yet it is easy to make out that such a supposed unity can never be, and that behind its solemn frontage is a mere jumble of ideas. Nevertheless this bogus unit has notoriously had a strange power over man's mind and proved itself to be perhaps the most disastrous idol he has ever set up.

Abstraction of some degree is universal and inveterate in all kinds of thinking; in philosophic thinking however it is in addition characteristic and indispensable. The aim of philosophy is to unify all knowledge; it must therefore seek the generality it supposes to lie behind the multitudinous particulars of experience In thus separating reality from its accidents it must depend on the abstract method as its instrument and on reason as its sanction Things will be true when they are pronounced true by the informed and enlightened intellect The ultimate standard of philosophic truth is therefore an internal one; in the last resort such a truth is one that "feels true" to the philosopher. Philosophy has been cultivated by many, perhaps even most of the ablest minds the human race has produced It has evolved innumerable systems of doctrine, each rationally proved by its founder to be true, and all inconsistent with one another No enterprise has ever been longer or better pursued than the effort to find a body of philosophic doctrine which should compel the universal assent of rational minds An experiment that has gone on failing for two and a half millennia may well make us wonder whether the apparatus is adequate or the method sound

SCIENCE AND PHILOSOPHY IN CONTRAST

The rough definitions I have tried to make of the scientific and philosophic methods should now permit us to bring the two into useful comparison with one another. Before doing so however it is necessary to have clearly in mind that in practice the two procedures are by no means always kept distinct. Many a supposedly scientific opinion gets itself supported on purely rational grounds, and many a philosophic conclusion affects to depend on verification. We are concerned here with the characteristic quality of the two methods, and the fact that in actual use they are often confused only adds to the need for clear definition. Philosophy then desires its conclusions to feel true, science that they should come true; philosophy needs certitude, science needs verification. Science has no certitudes because its conclusions are based not at all on internal conviction but wholly on the regularities of observed experience.

It seems at first sight a very hard saying that science has no certitudes. In face of it we may expect to be reminded that the precision and trustworthiness of science are its very essence These are undoubtedly among its most attractive characters, but they do not depend on the complete inner conviction of truth that alone gives the sense of certitude. Science makes great use of reason in its special way; it often appeals to the rationality of its conclusions in confirmation of them; and most of its conclusions do in fact come ultimately to seem profoundly reasonable. Nevertheless it does not possess, and should not claim to be based on, a fundamental rationality—the conception that the order or rationality of the universe tallies with the order or rationality of the best human minds, while it is for philosophy a vital necessity, is for science no more than a useful working hypothesis and therefore the servant rather than the master of research. Expositors of science however have unfortunately sometimes tended to drift into the philosophic mood. On such occasions they are apt to tell us of the august and inflexible uniformities of nature, the iron laws of cause and effect, the inevitable certainties of science and similar rationalistic dreams. If we examine science more realistically we shall find that its two most impressive aspects are first its detailed trustworthiness in practice, and secondly its *provisional quality*. It is in this second and rather unobtrusive character that the essence of natural science is revealed. The man of science within his own, often narrow, department can cheerfully regard all his knowledge as provisional only, and indefinitely liable to subversion by further inquiry He gives us our only hope that some day the human spirit may learn to distrust all certitude, and live bravely in its own right and its own strength

While it is to be insisted on that rationality is not the ultimate test of scientific truth, there is no reason to question the value of the rational process as an implement of research It is however an implement of which no finding can be regarded as valid until it has found verification in experience. Whatever flights of reasoning science may take it must ever be returning to the facts for reassurance Even in the most extended feats of pioneering in the light of theory—as for example we see in some degree in the evolution of the thermionic valve—there must be the repeated verification of actual experiment The wings given to science by reason must be used like those of the ostrich rather than like those of the eagle, and help it along without raising it from the solid earth

Philosophy on the other hand is characteristically free from these scruples about the validity of the most extended processes of reasoning. It insists of course that reason must be correctly used, but with this restriction, inflexibly maintains its ultimate validity. I need not repeat the pessimistic conclusion we have been compelled to draw from the failure of philosophy to yield any single dominating system of doctrine But it is necessary to notice the even more formidable attack on the ultimate validity of reason made by modern psychology. To the rationalist the intellect presents itself as a perfect instrument, if its material is prepared for it by competent logic, precise definition and a proper awareness of the difficult relations between language and meaning, then its operations must be carried on with frictionless integrity and its conclusions possess irresistible force I have expressed this view in its extreme and perhaps least credible aspect. Other forms of it, less frank but far more insidious, are so nearly general in us all, that it should be described quite brutally as a complete delusion. To the eye of the psychologist the intellect has shown itself to be after all no more than a human organ, with preferences and caprices like the stomach and the kidney. Every structure of argument it builds, however massive and symmetrical it may look, rests on foundations from which it has no means of excluding disturbance by bias and preconception

Under the attack of this kind of knowledge there can be no doubt that sooner or later the supposed ndependent validity of reason must go down

THE INTELLECT IN DAILY LIFE

We set out on this inquiry with the innocent and andable idea that people should be able to think or themselves It has already led us rather far so hat before allowing ourselves to be still more deeply nvolved we may well ask what is to be the function of this admittedly desirable independent thinking It is to enable us to contemplate usefully our current experience, and to develop opinions on social, political, and national situations without being entirely directed by custom and by prejudice Now it is characteristic of the experience of daily life that it comes before us as a miscellaneous jumble of elements of which the mixture is irreducible It must therefore be obvious that the scientific method cannot be directly applied to it since that method demands complete specification of its situations so that they may be subject to direct observation or controlled experiment It is necessary here to guard ourselves from thinking that the practice of the scientific method enlarges the powers of the mind Nothing is more flatly contradicted by experience than the belief that a man, distinguished in one or even several departments of science, is more likely to think sensibly about ordinary affairs than anyone else The philosophic method on the other hand is no more useful for direct application in daily life than is the scientific Its rationalism and its confident faith in abstraction would in themselves disqualify it as a guide in the real world In judging its capacity for this part however we are in a stronger position *than we are* with regard to science The scientific method has never been tried in public affairs, the philosophic method has been tried with a persistence and self devotion worthy of the higher insects Utilitarianism, Hegelianism, dialectical materialism, totalitarianism are all characteristic products of the philosophic method, however rational and self consistent they may be, they do not seem very helpful in causing people to think for themselves

Our search for a method that shall assist the useful contemplation of daily experience has thus had a totally negative result The common tendency to regard destructive criticism as always easy and generally reprehensible is one that I do not share; *indeed I doubt* if it could be acquiesced in by any sensible person making a frank survey of the intellectual world of today We cannot but be struck by the remarkable prevalence of systems of *doctrine*, by their loudness, their confusion, and their deleterious effect on conduct In all these systems the most indulgent examination will find little evidence of really enterprising thought but it will find a great deal of reconditioned lumber, at its best of a low order *of reality and now* used to justify the lazier the uglier and the baser inclinations of the human spirit At no time in the history of the intellect has the sanitary work of destructive criticism been more needful

CORRECTION OF THOUGHT

Although one might be reluctant to accept the orthodox view that destruction is justified only as a preliminary to rebuilding we can all agree that the one is an excellent preparation for the other If we have learnt to distrust the validity of the operations of the intellect, we at least have gained the advantage of looking at its proceedings with a new objectivity If we have been expelled from our rationalistic paradise, at least the world is all before us where to choose

To throw the helve after the hatchet is proverbially the temptation to which disappointment exposes us It is not surprising therefore that we are sometimes advised, by what seems to be a growing body of opinion, actually to abandon the use of reason This advice is, I suspect, more often founded on a dislike for the conclusions of reason than on any radical doubt of their validity We possess in reason an instrument that is powerful but admittedly very awkward to handle and apt to pinch our fingers or jump back on our shins It seems more sensible and less pusillanimous to learn how to use it rather than to throw it away On attempts to make the intellect a practical and handy implement a truly enormous amount of very difficult work has been done It is almost impossible to overstate the power and the ingenuity that have been given to the study of logic and to the relations of language and meaning What little I know of these prodigies I regard with awe, but with an uneasiness that, in spite of the best will in the world remains incurable Each seems to promise that with a little more polishing, a screw tightened here and a nut adjusted there, the intellect will at last have been made the perfect instrument If however, as I have tried to indicate, the whole instrument is subject to fundamental and incurable deflections, its operations cannot be rectified by the mere detailed adjustment of its inner machinery Indeed the perfection of its inner mechanism may even exaggerate its total error, for no one is more commonly impenetrable to ideas than the master of dialectic

For a good deal longer than 2000 years the ablest *men of every age have been fidgeting with the* mechanism of the intellect in the hope of helping mankind to think and therefore behave reasonably The state of the world today cannot but suggest that if practical thought is to become strong enough to help in saving our social systems from their increasing confusions some more radical corrective is necessary

The correction of instrumental errors is a familiar idea in practical science The maker, having turned out as perfect an instrument as he knows how, studies the quality of its performance Any error now found is to be dealt with not by tinkering with the machine but by having the constancy and amount of it carefully estimated and stated in a form that can be applied to the results It is this method that forces itself upon us in determining the function of the intellect and rendering it fully available Psychology has told us a great deal about the working of the mind and in an incidental way about its liabilities to error, but it has not systematically undertaken just this special practical task of, as it were, calibrating the intellect for the contemplation of ordinary experience Unless such a work can be done it seems probable that the ominous fatuity and confusion that mark our social and political affairs must continue to increase

We have defined our problem and indicated the direction in which its solution seems to lie The end of so long an argument is no place to examine in detail the ways in which this solution is to be applied It would however be too gross a failure in enterprise *if I were not to set out in plain terms a few crude* examples of such application which we can all put to use

In the first place we must get rid of the disastrous belief that there is any activity of the mind corresponding with the conception of pure reason The mind has no such function All processes of reasoning however abstract, are participated in and influenced by feeling We cannot separate off the reasoning process as such and set it to work in an emotional vacuum What we can do is to suspect the grosser cases of the effect of feeling and to make an appropriate correction. There are many emotional states of which the action may be so deeply masked that it is impossible to detect them at work by direct observation Such for example are the influence of nationalism, religion, personal vanity and fear—of death, of cruelty, of humiliation Do not let us nourish the delusion that we can catch these in action and cast them out We can tame them a little —only perhaps to make them more insidious—but even in the most dispassioned train of reasoning they are apt to exercise a steady treacherous pressure

There is probably no commoner error than that of supposing it to be possible by a direct effort and for the purpose of fair discussion to free the mind from preconception and prejudice about a given question "Mind you I am looking at it without prejudice"; how often have all of us said that in such circumstances. It is always untrue We should do well on these occasions to inquire closely by what precise mechanism this supernatural purgation has been effected

We are accustomed to regard evidence as a very positive and objective thing, which we blandly pronounce conclusive or inadequate or what not in the appropriate circumstances More reasonably science allows itself a certain amount of practical compromise and is willing for everyday purposes to accept quite a small amount of evidence for a phenomenon when it is consistent with its context When, however, the context of a new phenomenon is thought to be incongruous, troubles are apt to arise, and perfectly respectable evidence be rejected The history of the discovery of argon and of X rays admirably illustrates this On both those occasions the insidious category of "experimental error" was able to conceal the truth for long periods—in the case of argon for no less than 100 years Even science then shows that in practice its famous "experimental evidence" is no infallible safeguard against preconception

In regions where the relatively unemotional air of the laboratory does not prevail, the influence of feeling easily becomes strong enough to deprive even highly respectable bodies of evidence of any serious value It is for example a curious fact that in the very full discussions of spiritualistic phenomena attention has been chiefly concentrated on the dissection of the evidence itself. To the psychologist it is meanwhile obvious that testimony, of however irreproachable an appearance, which has been collected in the atmosphere of a strong desire to believe, must as a whole be subject to such deductions that its evidential value practically vanishes

The last I shall produce of these rather random examples of how we may set about the correction of the rational process concerns the reception of new ideas We like to suppose ourselves easily receptive of the new and that we are so by virtue of a natural mechanism Unfortunately this is the exact opposite of the truth. The mind likes a strange idea as little as the body likes a strange protein, and resists it with a similar energy. It would not perhaps be too fanciful to say that a new idea is the most quickly acting antigen known to science If we watch ourselves honestly we shall often find that we have begun to argue against a new idea even before it has been completely stated I have no doubt that that last sentence has already met with repudiation—and shown how quickly the defence mechanism gets to work.

DERMATOMYOSITIS AND PROGRESSIVE SCLERODERMA

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DERMATOMYOSITIS was referred to not long ago (Sheldon et al 1939) as a rare and mysterious disease That it is an obscure condition is true, but it is doubtful whether it ought to be classed as rare in view of the number of cases that have been seen in London alone during the past two or three years Moreover, as we shall see later, to the cases of dermatomyositis may be added the better-known progressive symmetrical scleroderma with sclerodactylia, which is only another aspect of the same disease process It is the purpose of this article to emphasise the identity of dermatomyositis with progressive scleroderma, and to indicate the possible relation of these conditions to others concerning which our knowledge is more advanced.

MUSCULAR CHANGES

The muscles in symmetrical scleroderma with sclerodactylia and in dermatomyositis show precisely the same type of change though it varies in degree in individual cases. The skeletal muscles are chiefly involved, but in severe cases those of the palate and pharynx are also affected, so that the symptoms may resemble to some extent those of bulbar palsy Muscular weakness in scleroderma has been recognised for many years, but the descriptions of the disease in textbooks give the impression that the sclerotic process invades the underlying muscles and destroys them by involvement of their interstitial connective tissue Nixon, as long ago as 1903, pointed out that this was not the case; he reported four cases of scleroderma with muscular atrophy, and quoted 15 others published previously, two of which appear in the literature on dermatomyositis Nixon was aware that muscular weakness is almost universal and not confined to the muscles immediately beneath the sclerodermatous skin, a fact which had been clearly demonstrated in earlier published accounts Histological examination of such muscle shows that interstitial sclerosis plays no part in the destructive change that it undergoes Interstitial fibrosis may, however, appear later when the muscle has become grossly atrophied The occurrence of extreme myopathy in scleroderma is well illustrated by the following case.

CASE 1.—A man, aged 40, a shoemaker, first noticed Raynaud's symptoms in the fingers, which subsequently became stiff owing to sclerodactylia so that they could not be fully extended These symptoms were accompanied by progressive weakness so that he became unable to work for more than short periods He presented himself at the outpatient department of St. Thomas's Hospital some months after the onset of the symptoms. At that time the fingers were slightly flexed owing to sclerodactylia, and the face presented the usual sclerodermatous mask; he showed generalised wasting; the arms could not be fully extended owing to contracture of the biceps; he could not rise from the ground without help; the voice was nasal and somewhat feeble On admission to hospital he was found to have some difficulty in swallowing, and radiography revealed an apparent obstruction at about the junction of the upper and middle thirds of the œsophagus. He improved with complete r and was allowed to return to his work He was readmitted some 5 months later His general weakness had become more pronounced, all the muscles being atrophied The speech was so nasal that it *could not be understood and was almost inaudible*, he had great difficulty in swallowing The movements of the chest were limited, not by scleroderma, which had always been quite superficial, but by muscular weakness He developed hypostatic pulmonary congestion and died 5 weeks after admission *Post mortem there was great wasting of all the* muscle tissue, the heart muscle was flabby Both lungs showed evidence of bronchopneumonia and bronchitis. The brain, pituitary and adrenals appeared to be normal, the left testicle was missing The thyroid was about normal in weight, but showed well-*marked histological alterations, these will be discussed* later As there was no sign of obstruction in the œsophagus the X-ray appearance must have been due to slow transit of the bolus owing to weakness of the œsophageal musculature Death was due to bronchopneumonia

Myasthenia may not always be present in progressive scleroderma but we have confirmed its existence in every case which we have seen since we thought of looking for it When the myasthenia is of mild degree it may perhaps be overlooked, but it can usually be detected by some simple test, such as making the patient rise from the ground or from a low chair We have experience of many such cases, of which the following is an example, and others are reported in the literature

CASE 2—*A woman of 55 The disease began with* Raynaud's symptoms, accompanied by stiffness of the fingers and tightness of the lips, 9 months before she came under observation No complaint of weakness was made, but inquiry elicited that she had lost much muscular strength and that she had suffered *from more or less constant pain in one thigh*, a piece of muscle excised from this thigh exhibited the histological changes characteristic of the *disease*

The nature of the myasthenia in scleroderma seems to have been overlooked to some extent, though it was described by Nixon (1903 and 1907) and by others before and since his publications Some of the cases have been diagnosed as scleroderma in conjunction with Addison's disease In those that have been termed dermatomyositis muscular weakness has often been extreme but often it has been insidious in onset and has pursued *a chronic course*

CUTANEOUS AND VASCULAR CHANGES

The existence of the same muscular changes in both dermatomyositis and scleroderma would not alone *justify* the conclusion that these diseases are varying aspects of the same process but support for this view is afforded by the fact that the cutaneous and vascular changes are also of the same order in both, such differences as exist are no greater than those seen, for example, in the acute and fixed forms *of lupus erythematosus*

Raynaud's symptoms may appear early in both conditions, particularly in sclerodactylia in which they are almost constantly present, but less commonly in dermatomyositis. In sclerodactylia they may precede other changes by some years There seems to be some relationship between these symptoms and the density of the accompanying sclerodermatous changes in the fingers Again, œdema, or erythema and œdema, affecting the face or the face, hands, and forearms simultaneously and sometimes other parts, is an early symptom in both conditions The skin, even in dense scleroderma, will often pit on digital pressure The disappearance or diminution of the œdematous phase is always followed in chronic cases by sclerosis, this may be very superficial, so that the skin cannot be pinched up with quite the normal facility, or it may be dense When superficial, the scleroderma is often accompanied by telangiectases and pigmentation, generally arranged in a variegated pattern and often resembling lupus erythematosus Such cases are generally called dermatomyositis or poikilodermatomyositis When the scleroderma is dense, though pigmentation is sometimes present, these variegated superficial changes are usually absent Perhaps the vessels are destroyed by the sclerosing process as well as the follicles sebaceous glands and such sweat glands as may be involved in it

The distribution of the cutaneous changes is the same in both conditions, though *it* varies *in extent* in different cases During the last few years we have seen all gradations between the acute œdematous and erythematous cutaneous change of an early dermatomyositis and the dense sclerosis of sclerodactylia *

RELATION BETWEEN MUSCLE CHANGES IN DERMATOMYOSITIS AND THYROTOXICOSIS

Dudgeon and Urquhart, in 1926, described certain changes in the skeletal muscles and in the extrinsic muscle of the eyeball in thyrotoxicosis In these *muscles dense focal collections of lymphocytes were* found, and in their neighbourhood atrophy of the muscles fibres in varying degree (see fig 1) In discussing these findings Dudgeon and Urquhart drew attention to the *following points* (1) Lymphorrhages similar to those observed by them in Graves's disease were described by Buzzard in myasthenia gravis; (2) Graves's disease has been known to occur sometimes in combination with myasthenia gravis, (3) Buzzard and Greenfield in discussing the morbid anatomy of myasthenia gravis, wrote ' the only characteristic feature is the presence of cellular deposits in many and various organs of the body, and particularly in the skeletal muscles Dudgeon and Urquhart stated that the pathological findings in the *muscles in myasthenia gravis referred to in the* literature were exactly similar to their findings in exophthalmic goitre, while the occasional association of the two diseases, and the fact that enlargement of the thymus gland is common in both myasthenia gravis and Graves's disease were facts which served to link these two diseases together Similar changes had not been observed in control muscles nor had they been seen by them in diseases other than those referred to

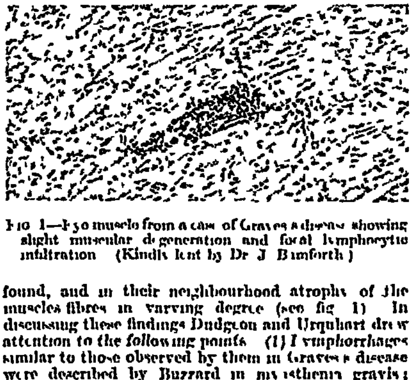

FIG 1—Eye muscle from a case of Graves's disease showing slight muscular degeneration and focal lymphocytic infiltration (Kindly lent by Dr J Bamforth)

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* For accounts of cases of dermatomyositis seen in London or recorded in recent English literature see Hanley (19[illegible]) Bonham-Carter (1939) Dowling (19[illegible] and 1937) [illegible] Freudenthal (1935) Evans (19[illegible]) [illegible] Anderson (19[illegible]) Ingram and Stewart (1934) [illegible] Weber and [illegible] (19[illegible]) [illegible] (1937) Shelley et al (19[illegible]) and [illegible] (19[illegible])

Rake (1931) described the muscular changes that he found in a case of scleroderma and sclerodactylia with Raynaud's disease on which he performed a complete post-mortem examination Shrunken hyaline and dark-staining fibres were observed to lie intermingled with fibres which were swollen, pale, and apparently disintegrated, so that individual fibres were easily seen The cross-striation could still be seen in the shrunken fibres, but not in the swollen ones The nuclei of the sarcolemma sheaths around the former were approximated, and appeared almost as continuous lines Some of these fibres were tortuous and whorled There were few apparently normal fibres These changes are identical with those seen in case 2 described in this paper (fig. 2)

A piece of muscle removed from case 1 described above shows complete disintegration of many of the muscle-fibres, and empty sarcolemma sheaths are apparent in places (fig 3) The nuclei of the sarcolemma are multiplied and arranged in lines Here and there are dense focal collections of lymphocytes, often situated around a blood-vessel (fig. 4) The late Prof L S Dudgeon examined these sections last September and he was immediately struck by the close resemblance between the changes in these sections and those in thyrotoxicosis, which he had described in 1926. There is, indeed, a remarkable similarity between them (compare fig 5)

Precisely the same changes have been seen in varying degree in many cases of dermatomyositis that have been published They are degenerative rather than inflammatory; the focal collections of lymphocytes appear only when disintegration is advanced The cutaneous changes also are degenerative; inflammatory changes, though they might be expected to be present in the more acute phase of the disease, are on the whole conspicuous by their absence Parkes Weber and Gray stated that the appearances in a case that they published in 1924 suggested a toxic degenerative process, and there seems no reason to depart from their view

That the muscles in dermatomyositis might show signs of damage similar to those found in thyrotoxicosis was suggested by the fact that both diseases show well-marked disturbances in creatine and carbohydrate metabolism (Griffiths 1939), these disturbances are also a feature of myasthenia gravis. The discovery that the muscle changes in all three conditions show almost identical changes was indeed startling From the clinical aspects of these diseases it could hardly be expected that such would be the case, but now we can perceive that, so far as the muscles are concerned, the difference is probably one of degree only. Clinically, the myasthenia of Graves's disease is usually less striking than the muscular atrophy and weakness of the more severe forms of myopathic scleroderma or dermatomyositis, and one section of Dudgeon's series, from the extrinsic muscles of the eyeball, on examination by Freudenthal and ourselves was clearly less severely affected than would be the case in severe dermatomyositis Moreover, the myopathy of myasthenia gravis differs from that of scleroderma in that the former will often respond to prostigmine, whereas the latter, even in relatively mild cases, is completed unaffected The reason for this difference is readily apparent when a muscle from a case of severe myopathic scleroderma is examined microscopically, it is evident that nothing could restore its function, even for a moment.

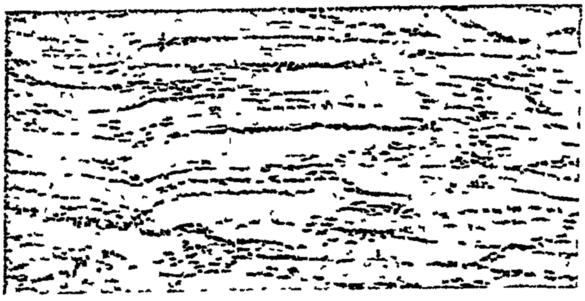

FIG 2 (case 2)—Bundles hyalinised, cross-striation absent, nuclei increased and arranged in rows along the sarcolemma

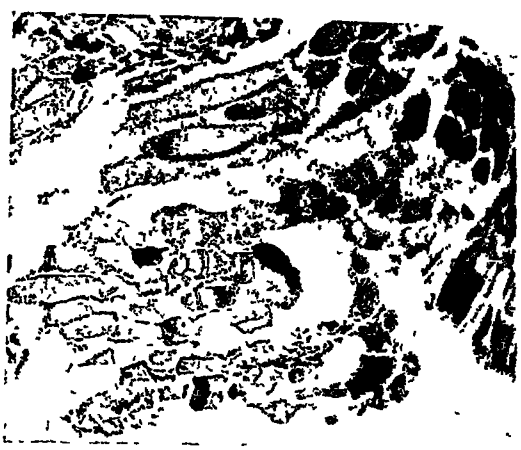

FIG 3 (case 1)—Gross disintegration of muscle Bundles hyalinised, in parts broken to pieces. The bundles are faintly stained in some places, in others (right margin) they have almost disappeared. Cross striation entirely absent.

In discussing with Dr. C P Symonds the question of a possible link between the myasthenia of dermatomyositis and that of Graves's disease our attention was drawn to the thyrotoxic myopathies in which the muscular symptoms, in his opinion, correspond quite closely to those of dermatomyositis Starling, Darke and Hunt (1938) have described two such cases recently The patients were males, 43 and 63 years of age The earliest symptoms were severe weakness and muscular atrophy while later a goitre and tachycardia developed Both patients recovered after thyroidectomy In a third case reported by [illegible] (1916), that of a man of 23, general weakness and muscular atrophy, vomiting, shortness of breath, difficulty in swallowing, nasal speech, and double vision were associated with a goitre and exophthalmos The condition was diagnosed as myasthenia gravis and exophthalmic goitre, but Brain (1938) considered it to be a case of thyrotoxic myopathy with exophthalmic ophthalmoplegia It seems possible, therefore, that other cases described as myasthenia gravis associated with exophthalmic goitre may have belonged to the thyrotoxic myopathies

As far as can be judged from Starling's cases muscular weakness developed quite a long while before other symptoms of thyrotoxicosis, certainly before any enlargement of the thyroid became evident, and in one long before the appearance of tachycardia The early history of the latter case appears to suggest either that the muscles may be affected in the absence of enlargement of the thyroid

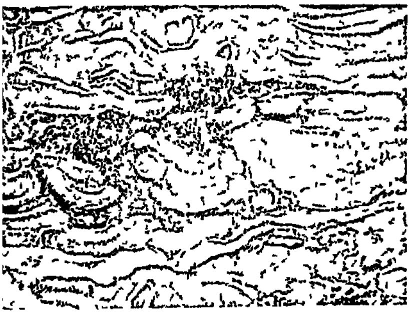

FIG 4 (case 1)—Muscle bundles hyalinised and caked together in places, with areas staining faintly Dense focal lymphocytic infiltration

rapid pulse and tremor, or that thyroxine intoxication alone does not account for the whole of the symptomatology of Graves's disease If the latter were true it would be possible to imagine a link between the myasthenia of exophthalmic goitre, or thyrotoxic myopathy, and that of scleroderma and dermatomyositis On the face of it there is very little evidence of thyroxine intoxication in the two last-named conditions There was a history of Graves's disease, treated by X rays, in a case reported by Gordon (1937) of scleroderma with sclerodactylia, and exophthalmos had persisted, but we have not encountered any others We should emphasise that progressive symmetrical scleroderma *only* is *being* considered here, not circumscribed scleroderma, which has *often* been found in association with Graves's disease (Sequeira 1916, Lortat Jacob et al 1929) Morphœa and its relationship with progressive scleroderma is no part of the present discussion In progressive scleroderma and in *dermatomyositis* the pulse rate is rapid only in severe cases in which the heart muscle is probably involved, there is no tremor and no exophthalmos, and the temperament of the patients we have seen is totally different from that found in Graves's disease

The basal metabolic rate is often slightly raised in scleroderma and dermatomyositis to judge from reported cases and personal experience Thus in eight cases in the French literature the B M R varied from − 8 to + 35 per cent (Hudelo and Rabut 1929, Hufschmitt 1929, Lortat Jacob et al 1929, Weissenbach et al 1938) In seven personal cases the rate was somewhat above normal in four and slightly subnormal in three In case 1 in this paper the B M R was +23, +21 and +13 per cent in May and June, 1938, and normal in October of that year, when the patient had become very ill

CHANGES IN THE THYROID

The recorded material on the question of thyroid changes in progressive scleroderma is rather scanty In seven cases described in the literature the thyroid was found to be considerably smaller than normal in four (Hektoen 1897, Matsui 1924) and at the same time to be the seat of more or less extensive fibrotic changes with atrophy of the follicles In two, though normal *in size* similar fibrotic changes are described with groups of atrophic follicles (Matsui 1924, Rake 1931) In another case reported by Gordon (1929) that of a woman who died within a year of the onset of the illness, appearances similar to those of colloid goitre, with some increase in stroma, were present In twelve additional cases quoted from post war literature in the Jadassohn Handbuch für Dermatologie, changes in the thyroid are described in all, most often fibrosis with atrophy of the follicles In one of our own cases, a very œdematous and rather rapidly fatal dermatomyositis, the histological changes in the thyroid were characteristic of colloid goitre Sections from the thyroid of case 1 in this paper were examined by Prof G W Nicholson, who stated that they exhibit the changes characteristic of a fibrous colloid goitre Although there seem to be quite definite alterations in the structure of the thyroid in progressive scleroderma their true significance cannot at the moment be appreciated

METABOLIC DISTURBANCES

Dermatomyositis and scleroderma are characterised by certain well marked metabolic disturbances In all cases the urine contains considerable amounts of creatine, often amounting to as much as 600 mg or more in the 24 hours The creatinine output, which in the normal subject is approximately constant, shows marked fluctuations from day to day, it is sometimes excessive, sometimes rather low In the more severe stages of the disease there is a general tendency for the creatinine excretion to be subnormal owing no doubt, to a reduction in the total mass of functioning muscle tissue We have also detected disturbances in the metabolism of carbohydrate Thus there may for instance, be a loss of carbohydrate tolerance associated with an impairment of the peripheral action of insulin, resulting in a small or absent arteriovenous sugar difference after glucose and insulin The magnitude of these changes varies from case to case Similar alterations in carbohydrate metabolism occur in both toxic and non toxic goitre, in myasthenia gravis, and in acromegaly, even in the absence of the hyperthyroidism which sometimes accompanies the last named condition (Griffiths 1939) Thus it would appear that not only are dermatomyositis, myasthenia gravis and thyroid disorders linked by similar histological changes in the muscles, but also by the existence in all of metabolic disturbances resulting in creatinuria and interference with the peripheral action of insulin

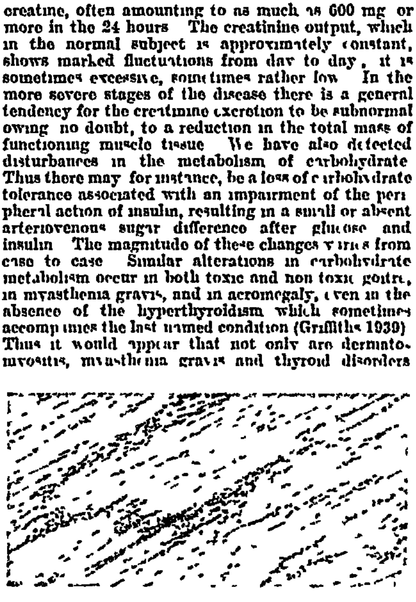

FIG 5 (case 1)—Pectoral muscle Changes about intermediate between those seen in figs 2 and 3, and very similar to fig 1

Decalcification of the bones has been observed repeatedly in symmetrical scleroderma, and in dermatomyositis in a few instances (Stuckey 1935, Evans 1937) Probably it has not often been looked for in dermatomyositis Generalised osteoporosis was demonstrable in the first case quoted in this paper some weeks before death, though it was absent 9 months previously. The deposition of calcium salts in the skin is quite common in scleroderma, especially in the fingers in sclerodactylia (Thibierge Weissenbach syndrome), and according to Petges (1933) it has been seen occasionally in dermatomyositis.

Hunter (1930–31) found that controlled radiograms in exophthalmic goitre revealed poverty of calcium in less than half the cases examined, and he quotes Aub, Heath and Ropes, who found that hyperthyroidism is associated with greatly increased excretion of calcium in the urine. These authors found also that the administration of thyroid to two normal subjects produced the same result Hunter also quotes several recorded instances of severe osteoporosis in hyperthyroidism In symmetrical scleroderma the calcium and phosphorus balances were studied in two cases by Cornbleet and Struck (1937). They found a positive balance in both, and thought that the retention of calcium and phosphorus could be accounted for by diminished excretion of these elements in the urine. The calcium and phosphorus in the blood of our patients has been normal; according to Hunter normal figures are also found in exophthalmic goitre.

CONCLUSION

Dermatomyositis and progressive symmetrical scleroderma are one and the same disease, a process which involves chiefly the blood-vessels, the skin and the skeletal muscles throughout the body. It has been shown that the muscles in both conditions undergo the same histological alteration. The muscular symptoms also are the same in both diseases, consisting of mild to extremely severe myasthenia. The cutaneous and vascular changes are of the same order. Raynaud's symptoms arise in both, though more frequently in scleroderma with sclerodactylia than in the type of case that is usually termed dermatomyositis. The initial cutaneous symptoms in both conditions is usually œdema, and the same regions are affected with remarkable constancy; when the œdematous phase settles down the skin becomes densely or superficially sclerosed. In both muscle and skin the changes are degenerative, not inflammatory.

Both progressive scleroderma and dermatomyositis have certain characteristics in common with thyroid disease and myasthenia gravis. The common factors may be summarised as follows. (1) the skeletal muscles show exactly similar pathological changes in both thyrotoxicosis and myasthenia gravis, and the muscular changes in dermatomyositis are of the same order, (2) clinically, the muscular symptoms in dermatomyositis and thyrotoxicosis are similar, though different in degree; (3) creatinuria is common to toxic and, in many cases, non-toxic goitre, myasthenia gravis and dermatomyositis; (4) certain disturbances in carbohydrate metabolism in thyroid disease have their counterpart in dermatomyositis, and calcium metabolism is affected in both; and (5) histologically normal thyroids are not found in any case of progressive scleroderma

These facts seem to be sufficiently striking to suggest that there is possibly a link between dermatomyositis or progressive scleroderma, thyrotoxicosis and myasthenia gravis.

We should like to express our indebtedness to Mr. K. S. MacDonald, photographer to University College Hospital, for making the photomicrographs.

(*References at foot of next column*)

DIAGNOSIS OF HYDATIDIFORM MOLE BY BIOLOGICAL ASSAY

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In 1927 Aschheim and Zondek described the biological effect of the urine of pregnant women on the ovary of the mouse. Later Aschheim (1930) stated that in cases of hydatidiform mole a positive reaction could be obtained with a twelfth of the amount of urine usually necessary to produce this effect. Since the introduction by Friedman (1929) of the test bearing his name, it has been widely used as a more rapid and convenient method for the diagnosis of pregnancy than the Aschheim-Zondek (A.-Z.) reaction. Various workers have used the Friedman test for the diagnosis of hydatidiform mole or of chorionepithelioma, but there has been a wide divergence of opinion as to the technique and interpretation of both tests in this application.

Zondek (1931) described a technique by which each of ten mice received a slightly different dose of urine. In this way concentrations of gonadotropic hormone of 27,770–250,000 mouse units per litre (M.U./L.) could be estimated; he stated that any value above 50,000 M.U./L was abnormal in pregnancy. In 1937 he stated more precisely that early pregnancies showed 5000–30,000 M.U./L., that 200,000 M.U./L. must be present before hydatidiform mole could be diagnosed, and that the presence of the hormone must be demonstrated in the cerebrospinal fluid.

Crew (1936, 1937) from his experience of 7000 pregnancy tests deduced that an A.-Z. test positive in a dilution of 1 in 10 was so rare that the presence of abnormal tissue should be suspected; he considered a test positive in a dilution of 1 in 100 to be diagnostic of hydatidiform mole.

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* Holding the British Drug Houses research fellowship.

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Using rabbits, Mazer (1933) corrected his earlier statement (Mazer and Goldstein 1932) that a positive Friedman test with less than 1 c cm. of urine was diagnostic of hydatidiform mole, and he substituted the figure 0 06 c cm, which amount was confirmed by Dabney et al. (1933, 1934), who showed that a fiftieth of the amount of urine usually employed (0 4 c cm instead of 20 c cm) gave a positive Friedman test in a case in which no hydatidiform mole was found, and that in a case of hydatidiform mole a positive reaction was obtained with 0 06 c cm

Schoeneck (1936) obtained a curve of the excretion of gonadotropic hormone at different periods of pregnancy, using the minimal reactive dose in the immature rabbit as his method of assay He reported only *one normal pregnancy* which gave a positive reaction with as little as 0 05 c cm of urine Sixteen patients with pernicious vomiting of pregnancy gave positive reactions with 0 025–0 0125 c cm Two cases in which hydatidiform mole tissue was found gave positive reactions with 0 0066 and 0 0063 c cm

Owing to the different methods of assay employed comparison of these findings is impossible, but there seems to be general agreement that the excretion of gonadotropic hormone in normal pregnancy can reach higher levels than was at first thought The case which follows illustrates some of the difficulties and dangers of a diagnosis of hydatidiform mole based on biological assay.

INVESTIGATION OF A CASE

The Friedman test was done on immature rabbits (dealer's stock) isolated for at least three weeks Two intravenous injections of 10 c cm of urine were given at 24 hours' interval, the animal being killed 48 hours after the first injection Fresh early-morning specimens of urine without preservative were used, any dilutions of urine were made with normal saline, the total amount and timing of the injections being kept as before All tests were done in duplicate and the results expressed as the minimal reactive dose In an attempt to express the results in mouse units the modification of the A-Z test recommended by Zondek (1931) was used in seven cases but the individual variation in sensitivity was too great in the mice at our disposal for this test to be of any value in this inquiry

The patient was a nullipara, aged 27, with *no* abnormalities in past, family, or menstrual history She first attended at the antenatal clinic on Oct 26, 1937 The date of her last menstrual period was July 30 Her pregnancy was then 11 weeks old and considered normal except for a history of brown vaginal discharge for one day on Oct. 23 Wassermann reaction negative Blood pressure 120/60

On Nov 17 she returned with a history of bleeding per vaginam since the last examination, and headache and visual disturbance for forty-eight hours Blood pressure 140/80 Nothing abnormal was detected in her urine She was admitted at once Her fundus uteri suggested a 20 weeks' pregnancy and was hard and tender The estimated duration of pregnancy was 16 weeks

On Nov. 21 Friedman tests gave the following results: undiluted (20 c cm) positive, 1 in 100 (0 2 c cm) positive, 1 in 200 (0 1 c cm) positive, and 1 in 300 (0 06 c cm) *negative*

On the 20th radiography showed a foetus aged 16 weeks Friedman tests were repeated and confirmed A Z tests were 1 in 10 positive and 1 in 100 positive Several small amounts of blood were lost, but no vesicles were seen A diagnosis of hydatidiform mole in a twin pregnancy was considered, but expectant treatment was continued

On Dec 6 the uterus was of the size normal for a 22 weeks' pregnancy. Amenorrhœa had continued 17 weeks The uterus was less tender. Blood-pressure 105/50

On the 15th radiography showed that the foetus was considerably larger and the fœtal parts normal Friedman tests were 1 in 200 (0 1 c cm) negative and undiluted (20 c cm) positive

On the 22nd a ten inch foetus of 18 weeks' development and a blood-clot (110 g) were expelled The foetus had been dead two or three days The placenta was examined macroscopically and sections were cut from several areas, no evidence of any vesicular degeneration could be found (cf Masani 1937) The urine of this patient never showed any albumin, and all renal function tests were normal The Wassermann reaction was negative when repeated Friedman tests since discharge have been negative on two occasions (Jan 1 and April 23, 1938)

FURTHER INQUIRIES

An attempt was made to investigate the upper limit of normality for the excretion of gonadotropic hormone in pregnancy In view of the findings of Browne and Venning (1936) that the urinary excretion of these substances during pregnancy was at its maximum at 10–12 weeks, five consecutive cases attending the antenatal clinic at this stage of pregnancy were subjected to assay (see table) Later, urine was obtained from two cases of hydatidiform mole Although in *one* case expulsion of the mole had begun, the Friedman test was positive with 0 033 c cm and negative with 0 028 c cm of urine Assay in mice showed more than 200,000 M U /L of gonadotropic hormone In the *other* case, in which the mole was actively growing, the Friedman test was positive with 0 01 c cm and negative with 0 005 c cm of urine. One case of hyperemesis gravidarum of moderate severity was investigated, the patient being 11 weeks pregnant The Friedman test was positive with 0 04 c cm of urine One week later it was positive with 0 06 c cm and negative with 0 05 c cm urine The quantitative test in mice was inconclusive

FRIEDMAN TESTS IN NORMAL AND IN ABNORMAL PREGNANCIES

—	Duration of pregnancy (weeks)	Friedman test (urine c cm.)		Remarks
		Pos	Neg	
Normal pregnancy	6	1 0	0 4	—
	10–12	0 13	0 10	—
	10–12	0·20	0 13	—
	14	—	0 40	—
	12–14	0·20	0 13	—
	12–14	0 40	0·20	—
Accidental hæmorrhage*	15	0 10	0·06	—
	18	20 0†	0 10	—
Hydatidiform mole	—	0 033	0 028	Mole being expelled
	—	0·01	0 005	Mole growing actively
Hyperemesis gravidarum	11	0 04	—	Urine 420 c cm daily
	12	0 06	0 05	" 830 c cm daily

* Case reported in this article

† These were the only assays made on this date

DISCUSSION

The peak of the excretion of gonadotropic hormone during pregnancy has been reported at times as far apart as the thirtieth day of pregnancy (Evans, Kohls, and Wonder 1937) and the seventh month (Kennedy 1933) Browne and Venning (1936) and Schoeneck (1936) agree in finding the peak between the eighth and tenth weeks, this is supported by the previous findings of one of us on the gonadotropic hormone in the blood (Boycott and Rowlands 1938). This peak lasts only a very short time in any one woman; according to Schoeneck, during this peak period as little urine as 0·1 c.cm. or rarely 0·05 c cm. will produce a positive test in a rabbit It is at this period of pregnancy that the diagnosis of hydatidiform mole is often mooted

Higher values than those at the peak period of normal pregnancy are obtained in hyperemesis gravidarum, in which the minimal reactive dose may vary from 0 06 to 0 012 c.cm. That high values are found in all forms of vomiting in pregnancy (Schoeneck 1936) suggests that there is a causal relationship between the two phenomena; but reduction of the urinary output is often considerable in these cases, and the hormone output should be calculated on a daily basis rather than per litre. The concentration caused by the diminished output of urine does not, however, account entirely for the higher figures obtained.

Such comparable evidence as there is goes to show that some women with hydatidiform mole excrete more gonadotropic hormone than is found in any other disorder of pregnancy. On the other hand, cases of hydatidiform mole have been reported which gave a negative test in a rabbit (Reeb, Neerson, and Klein 1934) and showed such large minimal reactive doses as 5·0 c.cm and 0·5 c cm. (Schoeneck 1936); these were all cases in which it was stated that active proliferation was at an end. The overlap which evidently occurs is wide; it will be at its widest in cases in which there is vomiting and which are between the eighth and tenth weeks of pregnancy or are complicated by a hydatidiform mole which is not growing rapidly. As far as can be ascertained from the small number of observations published, the majority of cases of active hydatidiform mole give values not very far outside this zone of overlap. The case described in detail in this article showed a maximal excretion one-tenth of that found in the case of active hydatidiform mole and one-third of that in the case in which the mole was in process of expulsion. That the patient was not treated as a case of hydatidiform mole was mainly on the grounds of the absence of the characteristic "doughy" uterus, the general improvement in her condition, and the cessation of the hæmorrhages; the radiological evidence was of considerable value.

Biological testing is used extensively for the diagnosis of the recurrence of hydatidiform mole or of chorionepithelioma. The case reported by Kobak (1938), in which a normal ten weeks' pregnancy was mistaken for a recurrence on the evidence of a high level of gonadotropic hormone in the urine and hysterectomy was performed, shows that even in this connexion biological testing has its dangers

The use of the method of the minimal reactive dose in single rabbits is quick and gives surprisingly good results; our tests were done on these cases in duplicate, and there was no instance of absolute disagreement between the pair. It would obviously be preferable to employ the method depending on the increase in ovary weight in the immature rat, using batches of 10–20 animals (Boycott and Rowlands 1938); it is, however, rather lengthy and intricate when an answer is needed to assist in diagnosis.

CONCLUSIONS

(1) Excretion of gonadotropic hormone in normal pregnancy may reach a higher level than is usually recognised.

(2) The maximal excretion in normal pregnancy occurs at about the stage of pregnancy when the presence of hydatidiform mole is likely to be suspected.

(3) Although it is probable that in some cases of hydatidiform mole a larger excretion of gonadotropic hormone occurs than in any other condition (except chorionepithelioma), there is a wide range of excretion values in which no distinction between this and other conditions is possible.

(4) Diagnosis of hydatidiform mole on the biological assay of gonadotropic hormone alone is unreliable.

Our thanks are due to Prof. F. J. Browne for his advice and encouragement; to Prof. James Young for the specimens of urine from the cases of hydatidiform mole; and to the Medical Research Council for a grant to one of us (M. B.) for technical assistance.

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MECHANICAL RESPIRATION

TREATMENT OF TWENTY-ONE CASES

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OF 129 patients with poliomyelitis admitted to the Western Hospital (the L.C.C. centre for this disease) during the past four and a half years, 17 showed symptoms of respiratory embarrassment. Of these 14 were treated with an artificial respirator; 6 patients with diaphragmatic paralysis due to diphtheria and 1 with toxic polyneuritis were also treated by this method.

POLIOMYELITIS

Of these cases 5 were of the bulbar type; all died. Of the remaining 9, 6 are alive and progressing favourably; 3 of these, cases 8, 9 and 10 (see table), had intercostal paralysis only. Two had paralysis of the diaphragm and of some of the intercostals. One had paralysis of the diaphragm and weakness of the intercostals.

Cases with bulbar paralysis.—When much mucus was present in the pharynx it was cleared, as far as possible, by swabbing the back of the throat manually, by the use of the electrical suction apparatus and by a dose of atropine, gr. 1/200–1/100, which was given in an attempt to diminish further secretion, and repeated if necessary. Wilson (1932) found that atropine made the mucus stringy; this is true if frequent doses are given, but an initial dose seemed to help patients put in the machine for the first time. Postural drainage was also used Tracheotomy was not done in any of our cases, though Wilson did it in a few who apparently gained some relief. With some of the patients who were unconscious, with deep cyanosis and mucus pouring from the mouth, there was no time for more than a very hurried examination of diaphragm, intercostals and limbs, as treatment in the respirator seemed to be urgently needed Cases 2 and 3 (see table) were of such a type

POLIOMYELITIS CASES

Case and sex	Diaphragm		Intercostals		Bulbar paralysis	Duration of stay	Result
	Paralysed	Acting	Paralysed	Acting			
1 M	+		+		+	6 days	Died
2 F	+		.	Scarcely	+	46 hrs	Died
3 M	+		+		+	2 „	Died
4 F	+		+		+	20 „	Died
5 M	+			Weakly	+	3 days	Died
6 M	+		+			58 „	Died
7 F		+	+			53 „	Died
8 F		+	+			31 „	Alive
9 M		+	+			23 „	Alive
10 M		+	+			21 „	Alive
11 M	+		7 lower			20 „	Died
12 F	+			Weakly		10 „	Alive
13 F	+ L		6 lower			9 „	Alive
14 F			All R paralysed and 7 lower L	4 upper L		36 „	Alive*

* After 6 days this patient had to be replaced in respirator for 2 and later 3 hours a day and is still, 3 months after admission, receiving this treatment

It was, therefore, sometimes difficult to determine whether the respiratory embarrassment was due to 9th and 10th cranial nerve involvement or to both In some patients who had much cyanosis when out of the machine, we made use of oxygen under pressure by the McKesson resuscitator while nursing attention was being given The resuscitator was set to work at the same rate as the respirator with good effect, it can only be used when the airway is clear, lest mucus should be forced into the lungs

Lesions found post mortem in the respiratory system were œdematous lungs, areas of softening round bronchi and inspired stomach contents in bronchi in case 1, œdema and collapse of the lungs, hæmorrhage and bronchopneumonia in case 4, and consolidation of the right base and a small patch of consolidation in the left base in case 5

Other fatal cases—Cases 6, 7 and 11 are of particular interest because they died after they had been removed from the respirator though two of them (6 and 11) had appeared to be comfortable

Case 6, male, aged 16, had paralysis of the diaphragm and of all the intercostals When placed in the machine he was immediately relieved The diaphragm began acting 26 days later He was in the respirator for 58 days and seemed to be comfortable after removal He had a convulsion 11 days later with acute dilatation of the stomach and died in a few hours Post mortem showed small patch of early bronchopneumonia in right lower lobe and there were small hæmorrhages in well-aerated lungs

Case 11, male, aged 31, had paralysis of the diaphragm and the lower seven intercostals on both sides He was very dyspnœic when placed in the machine and immensely relieved by it Respirator treatment was continued for 18 days and he was apparently comfortable after removal Thirty nine days later, while under treatment at an orthopædic hospital, he developed acute œdema of the lungs and sudden respiratory failure, dying in 15 minutes Permission for an autopsy could not be obtained.

Case 7, female, aged 3, had paralysis of all the intercostals and the diaphragm was very sluggish The abdominal reflex was negative She was very distressed until put into the respirator but greatly relieved by it and went to sleep She was treated in the machine for 53 days There was no intercostal recovery On the 10th day after removal she developed abdominal distension which responded to treatment She was returned to the machine, but the diaphragmatic action became weaker and she died with signs of collapse of the lung This patient was never quite comfortable out of the machine, her respirations being somewhat jerky, though she was lively and played with her toys until the onset of distension Post mortem complete collapse of upper lobes was found and congestive bronchitis with peribronchial chronic inflammatory reaction in rest of lung

The pulse rate was much the same whether the patients were in or out of the machine, ranging from 92 to 104 in the two older ones and from 92 to 112 in the child In none of them was there intercostal recovery, the diaphragm began to act again though the abdominal reflex did not return, and there was serious embarrassment from abdominal distension Possibly such cases ought to have respirator treatment for some hours each day, our numbers have been too small to enable us to form an opinion on this point There seems to be no satisfactory criterion to enable us, to decide when patients should be permanently removed from the respirator, the absence of cyanosis and dyspnœa does not afford sufficient guidance

Landon (1932) found that of a group of cases of poliomyelitis with respiratory distress treated in the respirator who were, when discharged from hospital, able to breathe spontaneously, almost five times as many were dead at the end of 18 months as in the control group treated without the respirator All had died of respiratory disease, and pneumonia, emphysema and apneumatosis were among the findings His control group was not necessarily composed of the less serious cases, because the number of respirators at his disposal was limited, though he admits a natural inclination to rush a severe case to a respirator He suggests as causes for respiratory sequelæ too great a negative pressure, too quick a rate or a difficulty in controlling the temperature of the air in the machine Others have attributed the sequelæ to chronic anoxæmia Emphysema was not found post mortem in our fatal cases, and in only one was there a patch of pneumonia There was collapse of the upper lobes in case 7

Cases still alive—In three cases (8, 9 and 10) there was intercostal paralysis only

Case 8, female, aged 10, appeared to be equally comfortable whether in or out of the respirator Her abdominal reflex was absent After six months the intercostals are still paralysed and the abdominal reflex is still absent.

Case 9, male, aged 7, on admission had all intercostals paralysed Diaphragm acting, colour poor. Respirator gave almost instant relief No intercostal recovery 5 months later but abdominal reflex present Seems comfortable Without respirator treatment this patient would probably have died

Case 10, male, aged 6 On admission intercostals were not acting, the breathing was entirely diaphragmatic and the abdominal reflex absent Slight moist sounds in throat but scarcely any visible mucus Did not coöperate well at first—i e, did not breathe synchronously with the machine but at a very quick rate (31-38) He nearly died when the machine was stopped, so the rate was increased to 24 a minute and the negative pressure was raised from 15 to 20 cm. of water. Atropine gr. 1/200 was given and a mixture *containing* gr. 6 each of pot. brom. and chlor. hyd. The patient began to coöperate and, was greatly relieved. In this case also respirator treatment seems to have saved life. The abdominal reflex is absent and the lower intercostals are still paralysed 3 months after the onset of the disease.

Cases 12, 13 and 14, females aged 5. 4 and 24, with partial paralysis of the intercostals and paralysis of the diaphragm are all alive. Case 14 is still in hospital and requires treatment for three hours a day 3 months after the onset of the disease.

In addition to the 14 cases of poliomyelitis mentioned above, there were 3 patients with respiratory embarrassment who were not treated in the respirator.

A B, male, aged 4. On admission diaphragm acting, lower six intercostals on both sides paralysed. Very little distressed though restless. Appears comfortable but there is still intercostal weakness 4 months after onset.

C D, male, aged 2. On admission diaphragm acting, left intercostals weak. Alive 6 months later, but the intercostals have not yet recovered.

E F, male, aged 13. Bulbar paralysis. Died before being put in respirator.

DIPHTHERIA AND TOXIC POLYNEURITIS

Of the 6 cases of diaphragmatic paralysis due to severe faucial diphtheria treated in the respirator, all had coincident pharyngeal paralysis and were very seriously ill. All but 2 showed improvement, though there were 4 deaths and only 2 recoveries; the machine thus appeared to be of some help.

Fatal cases of diphtheria.

Case 2, female, aged 8, admitted on 7th day; 340,000 units A.T. Paralysis: palatal 39th, pharyngeal 40th, diaphragmatic 48th day; placed in respirator but died after about 24 hours.

Case 3, female, aged 2 yrs. 11 mths., admitted on 8th day; 200,000 units A T. Paralysis: pharyngeal 35th, diaphragmatic 39th day; placed in respirator for 8 days. Colour and respiration improved. Removed but developed collapse of right lung and died 5 days later.

Case 4, female, aged 4 yrs. 8 mths, admitted on 2nd day; 168,000 units A.T. Paralysis: palatal 19th, ciliary 39th, ext. rectus 36th, pharyngeal 40th, diaphragmatic 43rd day; placed in respirator. Colour improved but died after 24 hrs.

Case 6, female, aged 45, admitted on 5th day; 504,000 units A.T. Paralysis: ciliary 34th, palatal 39th, pharyngeal 48th, diaphragmatic 56th day; placed in respirator for approximately 16 hrs. with no evident relief. Died.

Recovered cases of diphtheria.

Case 1, female, aged 8, admitted on 4th day; 180,000 units A.T. Paralysis: pharyngeal 51st day, diaphragmatic 2 days later; placed in the respirator for 4 days. Recovered.

Case 5, female, aged 2 yrs. 6 mths., admitted on 5th day; 260,000 units A.T. Paralysis: pharyngeal 38th, diaphragmatic 43rd day; placed in respirator for 12 days. Recovered.

One case of toxic polyneuritis, in a woman aged 26, was also treated in the respirator. She had weakness of the intercostals and no diaphragmatic movement She remained in the machine for 24 days with relief and finally recovered full respiratory movement.

SUMMARY

Of 21 cases of respiratory difficulty treated by mechanical respiration, all but 2 were treated in the Siebe-Gorman respirator; cases 2 and 10 were treated in the Both type. Of the 14 poliomyelitis cases, 6 (43 per cent.) are alive. In 4 of these recovery seemed improbable without the respirator treatment. Of the diphtheria cases, there were 2 recoveries and 4 deaths. One case of toxic polyneuritis was treated and recovered.

My thanks are due to Mr. A. Rocyn Jones, who has seen most of the cases; to Dr. George Beaumont for his encouragement; to Dr. W. G. Barnard, who did the post-mortem examinations; to Dr. H. West and Dr. G. Gray, who made it possible for me to follow up the cases; and to Dr. W. H. Kelleher, the medical superintendent of this hospital, for helpful suggestions.

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BITOT'S SPOTS IN CEYLON

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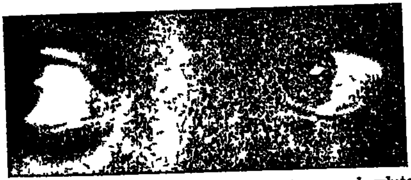
BITOT (1863) *described lesions of the conjunctiva* which were associated with night-blindness. He recorded 29 cases in the foundling hospital in Bordeaux in 1859–61. He described the lesions as not being inflammatory but as numerous small white specks or slender short lines aggregating into a pearly or silvery spot. They are placed laterally to the cornea and occur only as small dots medially to it. They are usually triangular but may be round or oval, in the former case the apex points externally and the base is near the corneal margin and is somewhat concave. In some cases the surface of the spots is rugose, and in others arranged in a series of wavy parallel lines. The following sentence (p. 288) shows the nature of these lesions: "Elles sont donc inhérentes au tissu sur lequel elles sont étalées, elles sont composées de couches qui ne sont pas d'une autre nature que l'épithélium L'examen microscopique a dissipé toute espèce de doute sur ce point. Les taches héméralopiques sont une altération non encore décrite, une production squameuse spéciale de l'épithélium conjonctival."

Mori (1922) and Wolbach and Howe (1925) established many years later that the essential change was a deficiency of vitamin A which led to the formation of keratinising squamous epithelium in various mucous membranes; and it appears from the above that Bitot as early as 1863 recognised these changes in these lesions of the conjunctiva.

We have seen several hundred cases of changes in the bulbar conjunctiva of the eyes of malnourished children and others in Ceylon, which we have been accustomed to refer to as Bitot's spots

The pathological changes, as seen by us, are of a definite type but do not conform to some of the descriptions given by other observers For instance, Nixon and Nixon (1938) say that Bitot's spots are "characterized by small triangular white patches on the outer and inner sides of the cornea covered by white foam-like spots . . This xerosis or keratinization of the conjunctiva may extend to the cornea" Again, May and Wolff (1938) refer to the white patches of Bitot's spots as being "covered with what looked like foam." We have never seen Bitot's spots extending to the cornea, for we do not regard the changes in the cornea which occur in keratomalacia as extensions of Bitot's spots, and the spots in the great majority of our cases have in no way resembled foam.

The changes over the sclerotics which lead to the formation of Bitot's spots may be described as follows. They begin as slight thickening and pigmentation of he conjunctiva of the sclerotics, one or more of the lood vessels running towards the cornea stand out as hough dilated, and capillaries may be seen dipping ertically into the thickened epithelium, apparently hey are slightly engorged. The thickening and igmentation increase, and heaped up accumulations of epithelial cells arise. These accumulations are white, stand out in relief from the pigmented background, and are usually striated. They may be compared to a dab of chalk paste striated with a pin. The common situation of these striated patches is over the sclerotics of the temporal side, they have never been seen to reach the limbus, although they usually extend to one or two millimetres from the corneoscleratic junction (see left eye in figure). They are occasionally found over the sclerotics on the nasal side of the eye, but they have been seen in this situation in less than 2 per cent. of our cases. (Note the freedom from thickening and pigmentation over the nasal sclerotic of the right eye in the figure.) They often affect one eye only but may be bilateral. Usually Bitot's spots are triangular or oval, but occasionally they appear as numerous scattered striations several millimetres long and about 0·5 mm. wide. It is the white patches and not the diffuse thickening which we have called Bitot's spots. We have never seen ulceration of these spots. It appears probable that much increased pigmentation is likely to occur only among races with pigmented skins.


Left eye shows thickening, pigmentation, and white striated patches (Bitot's spots) of the temporal bulbar conjunctiva. This was also present in the right eye, but the nasal bulbar conjunctiva of both eyes was free from these changes.

Bitot said that all his patients had night-blindness, but this has not been present in most of ours.

The Bitot's spots described above tend to be very chronic, and it is necessary to give large doses of fish liver oils or concentrated preparations of vitamin A to clear them.

It may be that there are two forms of xerosis or keratinisation of the bulbar conjunctiva: an acute form in which the changes take place rapidly, forming loose accumulations of degenerate epithelium which appear foamy, and a chronic form in which the accumulations of epithelium take place more slowly and are more compact. If this is so, possibly the first form is more likely to occur as a rare condition in countries where diets deficient in vitamin A are not in common use, and the second form, as in our cases, will be seen among populations who have become more or less biologically adapted to diets deficient in this vitamin, and consequently their reactions to the deficiency are more chronic.

Concomitant signs of malnutrition.—In making nutritional surveys of the poorer classes in India, Ceylon, and other countries it has become customary to look for certain definite signs, including phrynoderma, a papular dry skin eruption due to deficiency of vitamin A, angular stomatitis, and superficial erosion of the tongue. The last two are almost certainly due to the same deficiency and will be alluded to as "sore mouth." We have attempted to discover a correlation between the presence of Bitot's spots and these signs of malnutrition. A correlation may be considered specific when two signs due to the same deficiency coexist in the same child, but a poor diet is seldom deficient in only one respect, and when signs due to different deficiencies coexist in the same child the correlation may be considered general.

In September, 1938, 976 children of the free schools in rural and town areas of the southern part of Ceylon were examined for various signs of malnutrition. Most of these schools were in the dry zone. Phrynoderma was present in 21 per cent. of the children, Bitot's spots in 5·6 per cent., and "sore mouth" in 4·8 per cent. In 62 per cent. of those with Bitot's spots there was also phrynoderma, whereas, if there were no specific or general correlation, only 21 per cent. of those with Bitot's spots would be expected to show this condition. In 3 per cent. of the children with Bitot's spots there was also "sore mouth", which is less than the expected incidence.

A second survey was made in September, 1938, in the northern parts of Ceylon. Of 1497 children examined 4·0 per cent. had phrynoderma. Bitot's spots were not common among these children, only 0·7 per cent. being affected. "Sore mouth" was present in 19·8 per cent. But 25 per cent. of those with Bitot's spots also had phrynoderma, the incidence being five times greater than that expected without correlation, and 12 per cent. of those with Bitot's spots also had "sore mouth," which is less than the expected uncorrelated incidence. The accompanying table summarises these two surveys:—

SIGNS OF DEFICIENCY OF VITAMIN A IN SCHOOL-CHILDREN IN CEYLON

Area	Children examined	Phrynoderma	"Sore mouth"	Bitot's spots	Bitot's spots with phrynoderma	Bitot's spots with "sore mouth"
		Percentage				
Southern Ceylon	976	21·0	4·8	5·6	61·8	2·9
Northern Ceylon	1497	4·0	19·8	0·7	25·0	12·5

Epithelial thickening and pigmentation.—Many of the children of the poorer classes in Ceylon show some thickening and pigmentation of the conjunctiva over the sclerotics without the more advanced changes in the form of Bitot's spots, but much work will be necessary to define the range of texture and pigmentation of the sclerotic conjunctiva of races with dark skins before these signs may be used as a indication of deficiency of vitamin A.

General health and specific signs of dietary deficiencies.—Many children with signs of dietary deficiency otherwise appear to be in good health; they are not emaciated nor appear stunted and are fairly alert and active. (Bitot said that most of his subjects were in good general health.) But it has been shown for those classes in which these signs of deficiency are prevalent that the children are considerably smaller at each year of life than the children of the better classes among whom these signs are uncommon, and the mortality-rate is far higher among the former than among the latter (Nicholls 1936)

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A CASE OF ACUTE PRIMARY SUPPURATIVE GASTRITIS

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The present communication describes a case of acute primary suppurative gastritis discovered at autopsy.

The patient was an African police warder aged about 30 years. For some weeks he had been repeatedly unfit for duty owing to indeterminate illness. On Feb. 7, 1939, he was admitted to the Sewa Hadji Hospital complaining of fever, headache, aching of his body, and constipation Temp. 103·2° F., pulse 100, resp. 96 Chest appeared normal. Spleen enlarged. He complained of epigastric pain but there was no vomiting. Hæmoglobin 50 per cent.; urine contained a few pus cells He was given quinine, but his temperature remained high and he died at 9.20 A.M. on Feb. 10.

POST-MORTEM FINDINGS

The examination was made 1½ hours after death. The body was that of a well-nourished man *Lungs* and pleuræ normal; no adhesions. The *pericardium* contained a moderate amount of bloodstained fluid and clot; intense venous congestion of coronary veins and distension of right auricle; rest of heart normal. The *peritoneum* contained a moderate amount of clear fluid.

The *stomach* was empty. Its wall was thick, œdematous, and whitish, the mucous membrane being thrown up into great thickened folds. The swelling involved the whole stomach, but was most pronounced at the cardiac end of the lesser curvature Over most of the fundus the wall was about 0·6–1·2 cm thick, but near the cardiac sphincter, at the site of submucosal hæmorrhage, it was about 2 cm thick. There were petechial submucosal hæmorrhages along the lesser curvature, and on each side near the cardiac end there was a circular area of submucosal hæmorrhage about 3 cm. across. The rest of the mucous membrane, although much thickened, was not unduly congested; no ulceration could be seen naked-eye. The thickening and œdema did not extend beyond the cardiac and pyloric sphincters The external surface showed nothing abnormal and the lymph-glands along the lesser curvature were not enlarged.

Other organs—Œsophagus and pharynx normal; no signs of caustic or corrosive fluids. Duodenum and intestines normal, apart from the presence of a few ancylostomes. Liver had rather a pasty appearance on section; otherwise normal. Spleen swollen, dark red, firm. Kidneys very pale. Brain normal.

HISTOLOGY

The *stomach* was acutely inflamed, the changes being more marked in sections taken from the fundus than in those from the pyloric portion. In the fundus the mucous layer was mostly normal apart from a slight increase in the number of leucocytes in its deeper portion and in the muscularis mucosæ; but in one small area, overlying a similar lesion in the submucous coat, it was completely necrotic.

The submucous coat was the site of intense inflammation. The whole layer was greatly thickened and swollen with œdema. Infiltration with leucocytes (mostly polymorphs) was widespread. Some areas showed complete necrosis and loss of nuclear staining; in others there were deposits of fibrin or hæmorrhages. The inflammation was most intense round the large blood-vessels and lymphatics. The walls of th vessels were usually involved—where the inflammatio was slight there were collections of leucocytes in th intimal coat, where it was more severe all the coat were infiltrated with polymorphs, and in some vessel the whole wall was necrotic. In some cases th lumen was filled by a thrombus, but usually it con tained only a thin fibrinous clot or it was empty

The muscular coat showed changes which seeme to be secondary to those of the submucous laye The muscle bundles were separated by œdema an by infiltrations of inflammatory cells.

The subserous layer was thickened by œdema an by infiltration of inflammatory cells. Some of th larger lymphatics were distended with mononuclears In one place there was a small hæmorrhage. On section showed an inflammatory effusion on th peritoneal surface of the stomach.

In sections from the pyloric portion of the stomac the changes were less intense. The mucous laye was normal. The submucous coat showed inflammatory œdema, diffuse infiltrations with leucocyte and less marked inflammation of the vessels. Th muscular and subserous coats showed œdema an diffuse infiltrations by leucocytes.

In sections stained by Gram's method, *organisms* were most numerous near the area of necrosis in the mucous layer. The principal organisms were long thin gram-negative bacilli tending to grow in chains of various lengths; in size and shape they resembled tubercle bacilli but they were not acid-fast; many showed a beaded appearance, and some contained a central spore; in the deeper parts of the necrotic mucous membrane mentioned above they occurred in thick bundles. These bacilli were scattered diffusely in great numbers throughout most of the necrotic parts of the submucous coat. On the surface of the necrotic mucous membrane there were a few colonies of gram-positive cocci, obviously secondary invaders. Elsewhere there were a very few short thin gram-positive bacilli, and a rare chain of short thick gram-positive bacilli. In the less intensely inflamed parts no bacteria could be seen.

Liver.—There were fairly large collections of mononuclear cells in the portal sheaths. All the Kupffer cells were much distended with granules of brown pigment. The hepatic cells were approximately normal. No organisms were seen.

Spleen.—The malpighian bodies were rather small and the component lymphocytes were not densely packed; the walls of the central arterioles were slightly swollen The sinuses were almost empty In the pulp, red blood-corpuscles greatly predominated; there were also numerous granules of brown pigment

Kidney.—The glomeruli were shrunken and there was slight thickening of Bowman's capsules. Otherwise normal.

A small *lymph-gland* from the lesser curvature showed nothing abnormal; no organisms could be seen in it.

The histological appearances indicate a penetration of the mucous membrane at a few limited areas by the bacillus described, and a subsequent spreading of the inflammation throughout the submucous layer, involving secondarily the muscular and serous coats As no material for bacteriological culture had been taken during the post-mortem examination, the organism could not be identified further; its appearance was quite unlike that of anthrax. The hypothesis that this gastritis might have been caused by a poison is ruled out by (1) the history; (2) the absence of lesions in the mouth, pharynx, and œsophagus, and (3) the healthy state of the gastric mucous membrane (except for one tiny area) as compared with the intense and widespread inflammation of the submucous coat

According to Hurst, writing in Price's Medicine (3rd ed, p 539), acute suppurative gastritis is a very rare disease "due to invasion by streptococci or less frequently pneumococci, staphylococci or *B coli*, of the submucous tissue through a carcinomatous ulcer, or still more rarely through a chronic ulcer or the wound left after an operation on the stomach In exceptional cases the point of invasion cannot be recognised The condition may also occur in pyæmia, anthrax, and smallpox Epigastric pain and tenderness are severe Vomiting is always present Peritonitis generally supervenes in the course of 2 or 3 days" In the present case, vomiting was absent and the patient died as peritonitis and pericarditis were beginning to develop

Grateful acknowledgments are due to the director of medical services, Tanganyika Territory, and to Dr H J O'D Burke Gaffney, for facilities, assistance and advice

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A CASE OF HERPES OCCIPITO-COLLARIS

By W J Tindall, M D Lond

CLINICAL ASSISTANT, ROYAL BERKSHIRE HOSPITAL, READING

The communication by C P G Wakeley and J H Mulvany on geniculate herpes in The Lancet of April 1 (p 746) prompts me to record the following case which was under my care at that time

CASE RECORD

A man, aged 52, had been away from work suffering from troublesome furunculosis for several weeks before he developed herpes I myself had attended a case of trigeminal herpes shortly before visiting him on March 17 and might have been the vector No other source has been traced

On March 23 the patient began to have pain and tenderness in the left side of the scalp with stiffness of the neck. Three days later the typical vesiculate rash of herpes zoster began to appear, first over the middle region of the left *sternomastoid* At the same time he developed a cough The following day he complained that he had a sore throat and that his voice was affected, also that his left cheek seemed tender on pressure with the tongue On the 28th the left side of his tongue was sore and he complained that the left side of his mouth was dry By this time the rash was fully developed, the area involved being as shown in fig 1. There were in addition vesicles in the cleft between the ear and the mastoid and over the mastoid process On the left edge of the anterior third of the tongue was a row of shallow ulcers, apparently broken down vesicles, and there was another group at the junction of the hard and soft palate on the left side just where the dental plate ended The mouth had previously been quite clean and healthy

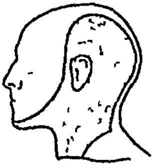

Fig 1—*Distribution of rash Both surfaces of the auricle and a small area immediately in front of it escaped The rash reached exactly to the midline from the point of the chin to the manubrial notch but did not reach the midline posteriorly There were vesicles in the cleft between the auricle and the mastoid process*

It is to be noted that the usual herpes oticus zone was free No vesicles were seen in the external meatus and the tympanic membrane was clear He was not conscious of hypoacousis, and, although watch and tuning-fork were heard at only six inches, there was no significant difference between the two sides No vesicles were seen in the larynx, there was no discharge from the nose, and no vesicles were seen in the nostril No facial palsy developed during the subsequent fortnight, but a slight droop of the left side of the face was apparent, dating from dental extraction three years before

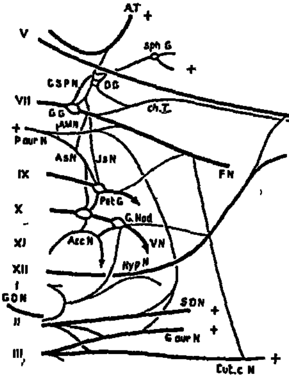

Fig 2—Relevant nervous connexions

ACC N, accessory nerve
A M N, auriculo mastoid br of vagus
A'S N, Arnold's nerve
A.T, Auriculo-temporal nerve
CH T, chorda tympani
CUT.C N, cutaneous cervical nerve
F N facial nerve
G AUR.N, great auricular nerve
G G, geniculate ganglion
G O N, great occipital nerve
G NOD, ganglion nodosum
G.S P.N, great superficial petrosal nerve
HYP N, hypoglossal nerve
J'S N, Jacobsen's nerve
L.N, lingual nerve
O G, otic ganglion
PET G, petrosal ganglion
P.AUR N, posterior auricular nerve
S O N, smaller occipital nerve
SPH G, sphenopalatine ganglion
V N, vagus nerve

Evidently a very complicated system of nervous connexions is represented by this case All the cutaneous zones, except the auriculo temporal, can be explained on the basis of the second and third cervical anterior divisions The posterior division—the great occipital nerve—did not appear affected, since the midline area of the occiput was not involved A connexion exists between the second and third cervical nerves and the posterior auricular branch of the facial nerve which joins *Arnold's* branch of the vagus (fig 2), and this may account for the vesiculate area behind the ear On the other hand, in order to explain the presence of vesicles in the auriculo temporal area, on the palate and tongue, it is necessary to assume disease of the auriculo-temporal nerve, sphenopalatine ganglion and the chorda tympani, the last also accounting for the dryness of the mouth

All these effects could result from herpes of the otic ganglion and this is connected by Jacobsen's nerve to the petrosal ganglion of the ninth nerve This in turn is connected to the jugular ganglion of the vagus, whence also arises Arnold's nerve to the area behind the ear The ganglion nodosum of the vagus lies slightly peripheral to the jugular ganglion and is connected to the loop between the first and second cervical nerves The cough and voice change may also be a result of disease affecting the vagus

In this way the whole syndrome is explicable on the basis of herpes of the anterior division of the second cervical nerve or as separate herpetic lesions of that nerve and the otic ganglion.

A similar case in a child of six years, showing left occipito-collaris herpes with lesions on the left side of the tip of the tongue, was described by Gaté and others in 1936.

REFERENCE

Gaté, J., Cuilleret, P., and Chanial G (1936) *Bull Soc. franc Derm. Syph* 43, 541.

PNEUMOCOCCAL MENINGITIS

COMPLICATING PNEUMOCOCCAL EMPYEMA

TREATED UNSUCCESSFULLY WITH M. & B. 693

By J. D. Aitchison, M.B. Glasg

RESIDENT ASSISTANT PHYSICIAN, CITY OF GLASGOW FEVER HOSPITAL, BELVIDERE

In view of the reports of recovery from pneumococcal meningitis treated with M. & B. 693 the following case of meningitis developing during such treatment should perhaps be recorded.

A child, 20 months old, was admitted to Belvidere Hospital on March 7, 1939. She was certified to be suffering from whooping-cough and pneumonia The whoop was first noticed on Jan. 4. There was a history of three previous attacks of pneumonia.

She was pale and irritable and she had a loose cough, though no whoop. Her stools were green and frequent. Temperature 101° F., pulse-rate 140, respiration-rate 52. Right lung: coarse crepitant râles at the base. Left lung: percussion note impaired over the posterior half of the axilla and at the inferior angle of the scapula. Over this area the respiratory murmur was vesicular but diminished. Tubular breathing was present just above it. The provisional diagnosis was localised collection of fluid.

On March 8 treatment with M. & B. 693 0·25 g. four times a day was begun. Three days later, when the area of dullness had extended slightly, the chest was explored, and 5 c.cm. of green purulent fluid was withdrawn; it contained gram-positive diplococci, which gave the capsule-swelling reaction with type XVI antipneumococcal serum. On March 13 radiography showed pleural thickening over the lower two-thirds of the left lung and a collection of fluid apparently lying between the lobes. On the 15th the left chest was again explored at several points over the dull area, but no fluid found. The temperature fell to normal, and stools were now normal. Four days later the temperature rose again, but the child looked better than she did on admission.

The general condition improved slowly, but the temperature varied from 98° F. to 101° F. On March 23 the percussion note was still impaired over the left posterior axillary region with diminished vesicular breath sounds, and medium crepitant râles; at the upper limit of the dull area the breathing was tubular. The right lung was clear. The left chest was again explored, but no fluid was found. A profuse nasal discharge appeared. M. & B. 693 was discontinued (15 g. having now been given). On March 26 sulphanilamide 0 5 g. thrice daily was started, but next day radiography of the chest showed the fluid rather less in amount, and on the 28th the sulphanilamide was discontinued. The nasal discharge was now scanty and no fluid was obtained by aspiration of the lung. The pyrexia, however, continued, though the lesion in the chest was gradually lessening, and on April 1 M. & B. 693 was again given (0·25 g. four times daily) Next day the temperature fell to normal but it rose to 103° F. on the evening of April 3. The child did not continue to improve, though the chest was clearing and there was no longer any tubular breathing. On April 8 she was worse. The stools were green, loose, and frequent; culture showed no non-lactose-fermenting organisms Half-strength saline and a 5 per cent. solution of glucose were given orally ad lib. By the 11th, however, she had become very lethargic (temperature 103° F), and on the following day there was a transient strabismus though no rigidity of neck or legs. Deterioration was thenceforward rapid, and, although there was no evidence of meningeal infection except the strabismus, which had not recurred, lumbar puncture was done, and 30 c.cm. of turbid fluid under pressure was withdrawn. Abundant gram-positive diplococci and polymorphs were present. The organisms showed swelling of the capsules with type XVI antipneumococcal serum. The child had convulsions on April 14, and died on the 15th Altogether 29 g. M. & B. 693 had been given. Post-mortem examination was refused.

The meningitis was apparently a direct sequel to the pleural infection, for type XVI pneumococci were recovered from both sites In view of the localisation of the empyema and the fact that pus was aspirated only once, and in small quantity, no attempt was made at open drainage. This was justified in so far that, until the onset, of enteritis and meningitis, improvement did take place

Maclean, Rogers, and Fleming[1] have found that pneumococci tested in vitro "vary enormously in their sensitivity to the drug, and this variation is not associated with the type of pneumococcus, but with the individual strain." They have also found that pneumococci can, in an infected animal treated with M. & B. 693, readily establish a tolerance or fastness to the drug. Although it is impossible to be dogmatic as to which of those explanations applies to this case, the gradual improvement in the chest infection suggests that the pneumococci acquired a fastness to the drug. On the other hand, the history of three previous attacks of "pneumonia," in conjunction with the spread to the meninges from a relatively subacute empyema, implies abnormal susceptibility to pneumococcal infection.

Although the concentration of M. & B. 693 in the blood or in the cerebrospinal fluid was not estimated, the dosage used (0 25 g. four times a day) has been found adequate in a large number of cases of pneumonia in young children in Belvidere Hospital. The drug was administered for a much longer period than is usual, but no toxic effects were noted.

I am indebted to Dr. T. Archibald, medical superintendent of the hospital, for permission to publish this case, and to Dr. A. W. McCrorie, assistant superintendent of the hospital, for his helpful advice.

PNEUMOCOCCAL MENINGITIS

DEVELOPING DURING TREATMENT WITH M. & B. 693

By J. H. Dowds, M.B, M.Sc.

(From the European Hospital, Roan Antelope Mine, Northern Rhodesia)

An adult male native was first seen on the second day of his illness, when he was found to have a small area of dullness at the right lung base, with bronchial breathing and a few associated fine crepitations, slight dyspnœa, a temperature of 104° F., and a full soft pulse with a rate of 120. M. & B. 693 1 g four times daily was given after an initial dose of 2 g on admission. Temperature and pulse reached normal on the third day of illness (after 9 g of the drug had been given) and remained so until the fifth day, when the temperature rose suddenly to 103° F, and shortly afterwards fine crepitations with commencing bronchial breathing were noted at the other lung base, and the conjunctivæ were now slightly icteric Temperature and pulse reached normal again in thirty six hours, and after two days of normal temperature the administration of M & B 693 was discontinued After one more day of apyrexia the temperature suddenly rose again to 101° F with no further development in the lung condition The following day the patient became restless and mentally confused, and next day a little stiffness of the neck muscles appeared without any of the other usual signs of meningitis He died the same day

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[1] Maclean, I. H., Rogers, K. B, and Fleming, A., *Lancet*, March 11, 1939, p. 562.

Post mortem examination revealed frank pus (containing pneumococci) over the vertex of both cerebral hemispheres The meningeal involvement apparently began immediately after the cessation of administration of M & B 693

This case shows the persistence of the pneumococcus in a virulent form after three days' apyrexia, in spite of a fairly long course of M & B 693 (24 g in all), and suggests the inadvisability of discontinuing the drug soon after symptoms and temperature have returned to normal

PNEUMOCOCCAL MENINGITIS TREATED WITH SULPHANILYLPYRIDINE

By Hugh Dunlop, M D, M Sc Lond, F R C P
PHYSICIAN TO THE ROYAL WATERLOO HOSPITAL, AND ASSISTANT PHYSICIAN TO CHARING CROSS HOSPITAL, LONDON, AND

John Laurie, M R C S
HOUSE PHYSICIAN TO THE ROYAL WATERLOO HOSPITAL

A boy of 9 was admitted to hospital on Feb 19, 1939 For six days he had complained of pain over the right eye The temperature had been 102° F and there had been severe headache but no vomiting There was œdema of the right supra-orbital region and upper eyelid, and extreme tenderness above the right eye The posterior neck muscles were rigid, Kernig's and Brudzinski's leg signs were elicited, the deep reflexes were present and equal but the left plantar reflex was extensor Temperature 103 8° F, pulse-rate 98, respirations 25 Photophobia, irritability and other meningeal symptoms were present

Lumbar puncture gave a turbid cerebrospinal fluid (C S F) under increased pressure, and on culture this gave a mixed growth of pneumococci and *Bacillus xerosis* Treatment with sulphanilylpyridine was started at once On the evening of admission Mr Charles Beevor drained the frontal sinus by external operation. The sinus which communicated with that of the left side was full of pus; it was packed with B I P P and a tube was inserted Next day the temperature fell to 98 4° F Sulphanilylpyridine was given daily by mouth, and culture of C S F removed on Feb 23 yielded no organisms On Feb 27 the drug was discontinued, a total of 24 5 g having been given Thirty-six hours later, however, on March 1, the temperature rose to 101 4° F, and a specimen of C S F then taken contained type IV pneumococci in considerable numbers, the white cell count being about 800 (all polymorphs). Administration of the drug was resumed and continued till March 10 Though there were still a few pneumococci in the C S F on March 6 the temperature became normal on the 3rd, and after a brief rise to 99 6° F remained normal until the patient left hospital on April 5 The general condition was good from about the third day after admission, apart from the recrudescence of March 1.

Anæmia developed about a week after admission and the red cell count on March 10 was only 3,000,000, the cells being pale and irregular, while the hæmoglobin was 47 per cent A transfusion of 350 c cm of blood was accordingly given on March 13, and by the 30th the hæmoglobin had reached 67 per cent The white cells fell from 13,500 per c mm on Feb 20 to 6000 on March 1 (polymorphs 58 per cent.), but they had risen again to 9000, with a normal differential count, on March 10

The total amount of the drug administered in the twenty days was 40 5 g

We wish to thank Mr Charles Beevor for permission to publish the case and Dr F A Knott for the numerous pathological investigations he performed

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At a meeting of this section held on June 13, with Dr Hugh Crichton Miller, the president, in the chair, a symposium on

The Chronic Uncertified

was opened by Dr G de M Rudolf In a large group of successive cases taken from various sources the commonest diagnoses had, he said, been anxiety, confusion, depression and schizophrenia The high proportion of anxiety cases—between 30 and 45 per cent—had been striking, and the sex incidence had been remarkably evenly distributed, with a slight preponderance of females not accounted for by the numerical superiority of the female population He had found Benzedrine (amphetamine) useful in the treatment of patients who were depressed in the early part of the day Occupational therapy had brought about great improvement in a number of cases of schizophrenia without the use of shock treatment In a group of 600 mental defectives outside mental hospitals, only 1 6 per cent had shown signs of psychoses In the treatment of post-encephalitic symptoms great improvement had been obtained with ordinary B P belladonna root prepared by the Bulgarian method Large numbers of higher-grade mental defectives were apparently missed until they broke out into violence or delinquency in reaction to some impossible demand Kent's test was a most useful emergency test its performance took only about a quarter of an hour and, although not quite so accurate as the Binet Simon test, the English modification was reasonably accurate to within two years Tests of accomplishment were valuable, and tests of temperament and character would be the most valuable of all if they could be devised

Dr Noel Harris saw the problem of the chronic uncertified as one which regularly confronted psychiatrists in private practice and in hospitals alike It was the problem of how to deal with the individual who behaved in an irresponsible and foolish manner, to the detriment of his own career and of the lives of his friends and relatives, and yet did not show the specific psychotic reactions which would justify his certification Such patients could be classified in order of frequency as psychopathic personalities, hysterics, alcoholic addicts, schizophrenics, drug addicts, paranoiacs, high-grade mental defectives, obsessionals, depressives and post-encephalitics. A difficult question arose when a patient who was not obviously of unsound mind used the threat of suicide or injury to someone else as a weapon against those around him. The question whether a physician was justified in certifying a person on the ground of danger of suicide was an important one. It would be easier to answer if the legal authorities and the public would realise that the physician was almost under a duty to take a risk at times in the interests of the patient. Suicide was by no means always an indication of incorrect diagnosis, carelessness, or lack of forethought. The general practitioner and the specialist were constantly asking the psychiatrist to admit without certification cases of primary depression, all of whom were potential suicides. Was the psychiatrist, he asked, to safeguard himself by refusing to admit such cases and thereby almost forcing their certification, when he knew that, by taking a certain risk and perhaps prejudicing his reputation and that of the hospital, he could help a large number of those depressives towards recovery? Those who had to make this decision would feel happier if they knew that the public and those who administered the law realised their difficulty and responsibility, and the possibility of suicide being committed in spite of the greatest care.

What should be done with the thoroughly irresponsible person? Should the psychiatrist encourage the police to prosecute or should he do nothing? A great difficulty was the tendency, when these patients were certified, for the mental hospital to discharge them after a few days as not insane. Paranoiacs should be kept out of a mental hospital if possible; with careful handling they could be prevented for long periods from giving trouble. He pleaded for new legislation, but pointed to two methods by which existing provisions could be utilised. Some hysterics and addicts could justifiably be certified and detained in a mental hospital as a psychological and disciplinary measure, but the coöperation of the superintendent and of the relatives was necessary to ensure that they should not be discharged merely because soon after admission they showed no signs of insanity. No member of the Board of Control would interfere if the certification were above-board and in the interests of the patient and his relatives. Greater use could be made of the form for the appointment of a receiver. It was chiefly employed in cases of senile decay or of organic disorder, but most psychiatrists were afraid to use it in cases of mild mental disturbance. The difficulty arose through the wording:—

> "Every person not so detained and not found a lunatic by inquisition with regard to whom it is proved to the satisfaction of the judge in lunacy that such person is, through mental infirmity arising from disease or age, incapable of managing his own affairs."

A decision that these words covered the case of a patient who was wasting his estate would greatly help the psychiatrist. New legislation should set up a board of legal and mental specialists to deal with problems of certification brought before them by medical men. Many of these doubtful patients could be most usefully accommodated in colonies similar to those in which phthisical patients were enabled to lead happy and useful lives.

Dr. W. **Clifford Scott** pointed out that many uncertified patients suffered quite as much, and caused their relatives quite as much suffering, as they would if they were certified. He found the period of a [illegible] a useful point at which to draw the line between chronic and acute cases: it was supported medically by experience and culturally by the ritual of mourning. The chronic uncertified class were exceedingly numerous, and in many clinics the mild forms of cyclothymia and schizophrenia tended to be missed. The older view that the line between psychosis and neurosis was certification was being broken down. The problem, which showed its magnitude in the courts, the outpatient departments of general hospitals and the agencies dealing with chronic unemployment, was analogous to those of illiteracy and infectious illness a century ago. The community had grown out of its attitude of resigned hopelessness to those evils, and would doubtless grow out of a similar attitude to mild mental disorder. Society had developed a belief in educability and had ce[illegible] to regard nature as all-powerful. It would come to regard sanity as by no means wholly dependent on nature but to a large extent on nurture. The personnel necessary for the treatment of the chronic uncertified would be numerous and would have to be trained in modern psychiatry and psycho-analytic methods, but the cost of proper provision would be small compared with that of one battleship.

There was need for district organisation of psychiatric services, and for means of coöperation between inpatient and outpatient facilities. Much time would be saved in a special hospital dealing with large numbers of severely ill mental outpatients, and much recourse to inpatient treatment would be avoided, if the psychiatrist could visit the patient at home and consult the family physician. Dr. Scott pleaded for the development of psychiatric services for the chronic uncertified based upon a district organisation similar to that of the educational and public-health services, staffed by personnel who were given the prospect of a lifelong career and adequate psychobiological and psycho-analytical training, with facilities for coöperation between the home and family doctor, the outpatient clinic and the psychiatric institution on the one hand, and the outpatient clinic, the general medical service, the court, the school and the employment agency on the other.

The **President**, opening the discussion, said that the heart of the problem was the patient who might be certified and who might be discharged forthwith. He maintained emphatically that the physician must take a risk with patients who might commit suicide. By doing so he had saved many persons from possibly permanent certification. The physician must take a broad outlook and weigh against the possibility of suicide the possibility that the patient's life would be quite as truly wasted if he were certified. It was useless to wait on the law. Doctors must interpret the wording of legal provisions for themselves with some degree of independence. They must not expect the master or the judge to say what the law meant by disease and whether the doctor should or should not sign the certificate. It was for the doctor to say what the disease was, and a great deal of mental and functional disorder was to be regarded as disease even if the judge did not agree. The "recurrent uncertified"—the cyclothymic who was not certifiable today but would be certifiable tomorrow and would alternate at regular intervals—constituted an even more difficult problem.

Dr. **Murdo Mackenzie** said that the cause of the increase in number of the patient who ought to be certified, who was a nuisance to himself and others, was the advance which had changed the voluntary boarder to the voluntary patient and had opened the rate aided hospital to him The chronic uncertified had one common feature between them they objected to being mixed up with ordinary mental patients, and the multiplication of special hospitals and clinics primarily interested in mild mental disorder, which they could frequent without restriction, had encouraged them There had been for years in the medical profession a reluctance to certify, psychiatrists had become aware that they might, many years after signing a certificate, have to suffer prolonged strain before proceedings and acute strain under cross examination, and most undesirable publicity Many patients were thus deprived of the benefits of institutional care Attempts to get lawyers to make doctors feel safe were useless

Dr **Mildred Creak** mentioned the large class of chronic neurotics who suffered from physical symptoms and who resented the suggestion that these had a psychological origin She inquired into the possibility of treating such patients by a fairly drastic physical regeneration, and asked whether analytical material extracted by the use of narcotics from a patient who would not have produced it in free association had any therapeutic value

Dr **Letitia Fairfield** reminded the section that nothing in the law compelled a person to be sane any citizen could be as insane as he liked so long as he did not harm himself or others A difficulty of this tolerance sometimes arose after the patient's death, when a mild chronic psychotic left a will which caused a great deal of injustice and harm It was then too late for the doctors to reap their just reward, and the lawyers came into their own This possibility should determine more often the question whether a patient should be certified, especially in his old age Speedy discharge of a patient who appeared to improve on admission to a mental hospital might be due to pure ignorance in the superintendent or, still more, in the magistrate Certain hysteropsychotics were amazingly clever at adapting their conduct to their situation and becoming "hypernormal" just when they were required to perform for the purpose of a certificate The good sense of the judges and the increasing education of the public would prevent substantial injustice being done if the physician in charge of the patient faced up to his duty and described psychosis when and where he met it even though it did not conform to any legal definition

Dr **John Brander** pointed to the great therapeutic value of certification and the incentive to recovery which it suddenly gave to neurotics who had enjoyed life as voluntary patients for months and years More suicidal patients should be certified the prospect of recovery was considerably greater in a live melancholic than in a dead neurasthenic An unsuccessful attempt at suicide, moreover, might leave a permanent trauma

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SECTION OF OTOLOGY

Ear Disease in the Child

At a meeting of this section held on June 17 at Sheffield, Dr A G **Wells** opened the discussion with a paper on the

TREATMENT OF DEFECTS IN HEARING AND OF SUPPURATIVE DISEASES OF THE MIDDLE EAR

based on experience gained in the service of the London County Council The measurement of hearing with the gramophone audiometer, he said, had become a routine, nearly 300,000 children having been tested Diastolisation had been employed on an extensive scale for treatment of hypertrophic rhinitis, mouth-breathing, eustachian catarrh, and catarrhal deafness It was also helpful in sinusitis, otorrhœa, and other conditions Of 1050 school children who did not pass a gramophone audiometer test and were found to be suitable for diastolisation, 85 per cent improved after treatment, 64 per cent enough to enable them to pass the hearing test Other children were found to need inflation, local treatment for otorrhœa, or removal of tonsils and adenoids besides diastolisation Each child had usually twelve to twenty-four treatments, two each week Chlorine ionisation had been used for some cases with fibrosis from tubotympanic inflammation The results were encouraging, but it was too early to give figures based on large numbers or to know whether improvements were maintained In catarrh of the ear, nose, and throat more raw fruit and vegetables should be eaten and carbohydrates should be cut down

Suppurative disease of the ear was mostly chronic in London school children and was likely to remain so until adequate arrangements were made for the efficient treatment of the child of pre school age Zinc ionisation had been used in his work for this condition since 1918 with greater success than with any other form of treatment It should be used in uncomplicated tympanic sepsis, in which it would give successful results in 90 per cent of cases This achievement was probably due to the provision of antisepsis without irritation Many cases of complicated tympanic sepsis could be made suitable for ionisation treatment—e g , by removing granulations

Acute inflammation of the middle ear had been managed by keeping the child in bed in a semi recumbent position, with a flannel garment covering the head and face and hanging loosely over the shoulders and chest Slits could be cut for the eyes. This wrapping was kept on for forty-eight hours, only being raised for meals. The hearing was tested two hourly to find out what was happening in the tympanum Drops were sometimes instilled into the ear but were not considered so important as the continuous heat produced by the head covering, which produced hyperæmia Irradiation with a Kromayer water cooled lamp, both before and after perforation of the tympanic membrane, had been given in 9 cases, with rapid resolution of the condition This lamp had also been used postoperatively in many cases of radical mastoids in which the healing process seemed to be slowing up

The Proetz displacement method had been used for children with sinus disease, but Dr Wells was not convinced of its value and would welcome views from other members of the section

Dr **Phyllis Kerridge** said that there was no need to emphasise the prevalence of chronic middle ear disease in children to an audience of otologists She proposed to tell them briefly the results of an investigation designed to ascertain why cases of this disease were encountered so much more commonly in hospital than in private practice Scarlet fever and measles were responsible for some of the cases, about 12 per cent of the patients in fever hospitals with these diseases developed aural complications Since the infection of the ear was usually due to streptococci, statistics of sulphanilamide therapy in these conditions were hopefully awaited Most cases of middle-ear disease in children, however, were chronic, either suppurative or catarrhal

She had tested the hearing of over 5000 schoolchildren from various social classes in different parts of Great Britain Defective hearing was found to be on the average about four times as common among children attending the public elementary schools as it was among children at schools at which fees were paid by their parents. Over 80 per cent of all the cases were due to middle-ear disease Among the more well-to-do group there was not a single case of chronically discharging ear, the defects in this class being very slight residual effects of past acute disease and only affecting 2 8 per cent. of the children. The defects in the poorer group averaged 12 per cent, the worst figures being 22 per cent in a well-housed but under-endowed orphanage in the poorest part of a small town. There was little difference between boarding-schools and day-schools in either group; nor had climate so much effect as was expected. The average annual rainfall of the East Anglian town tested was only half that of the town near Manchester, yet both these and a housing estate near London gave about the same percentage of defects.

In some of the districts investigated dietary surveys had been carried out by the Ministry of Health or by the Rowett Research Institute, Aberdeen. In the two places at which the worst figures were obtained the diet was deficient in total calorific value, in vitamins A and C, and in protein It was reasonable to expect that the incidence of chronic middle-ear disease would diminish with improvements in social conditions, especially since it had been shown that the diet of English people usually improved with increase in the family income. Dr. Kerridge did not suggest that nutrition was the only factor in the prevention of chronic middle-ear disease in children, nor had she any evidence as to whether any single food factor was important; but the results obtained by her indicated that nutrition was more important than climate or housing.

Dr. T. C. **Lonie**, speaking of the ascertainment of deafness and ear-disease in children, emphasised the disparity between the findings in the ordinary school medical examination and by the special testing with the gramophone audiometer, giving as examples the figures found in Wisbech by Dr. Kerridge and those found by his medical assistants. A very great difficulty in treating ascertained defects of hearing lay in the way in which doctors, nurses, patients, and parents became quickly bored with a chronic condition which resisted treatment and did not appear to interfere very greatly with the patient's normal life. Of 144 children who did not pass the gramophone audiometer test twice (10·7 per cent of the children tested) only 84 reported to the clinic for special examination by a school medical officer. Medical record cards were available for 125 of the children, from which it was found that otitis media or deafness had been already noted in 38. Of the 84 specially examined, present or past ear-disease was detectable in 66 and wax in 34

The difficulties in ascertaining deafness at the time of a school medical examination were many and included especially the short time available The results obtained varied widely in different parts of the country and were more likely to be due to variations in the methods and manners of the examining doctor than to differences in the incidence of defective hearing. Perhaps also some of the differences were due to errors in the recording of the statistics by clerks, for the headings under which ear conditions had to be classified for the Board of Education were difficult for laymen to understand.

Dr. Lonie said that, in spite of all the advantages of the gramophone audiometer test, there were grave practical difficulties in using it in a rural area Since it could not be used in routine school medical inspection, further disorganisation of school work was caused when the hearing was tested separately It was expensive in time and staff when the child population was scattered. Further, any special examination encouraged the school doctor to neglect a part of the child when he should be making a general examination For example, some school doctors took no notice of defective teeth since school dentists had been introduced. The invention of a pocket instrument emitting a standard source of sound in such a way that the amount heard could be measured in a minute or two would be a great advance.

Mr. **Musgrave Woodman** read a paper on the

POSITION OF THE PORTMANN OPERATION IN RELATION TO LABYRINTHINE VERTIGO

He said that operation was rarely necessary in this condition, which might be due to labyrinthine hypertension Vertigo might be the earliest and only symptom of vascular hypertension. Derangement of water metabolism did not seem to be so common a cause of vertigo in this country as in Denmark, but he recalled 3 cases in which tinnitus and vertigo were abolished by restriction of water intake and by the administration of Salyrgan or a similar preparation. As Sir James Dundas-Grant had shown, a complete block of the eustachian tube could cause absorption of air in the tympanum and a vascular congestion of its walls and of the adjoining labyrinth Increased endolymph was then secreted. If a bougie were introduced at intervals into the tube after cocainisation, complete cure followed in most cases A few intractable cases required a major operation. The Portmann operation should be carried out under local anæsthesia, and, if the cellular development of the bone was good, and good illumination was obtainable, it was quite easy. (Details of the operation, illustrated by diagrams, were given at the meeting.) Sepsis in the middle-ear cleft was an absolute contra-indication for this operation.

Mr. Woodman reported 11 cases, of which 8 had been operated on by him and 3 by Mr. Stirk Adams There were no fatalities or accidents (such as damage to the facial nerve). Vertigo was completely cured in 8 of the cases, 1 patient was much improved, 1 showed no improvement, and 1 could not be traced subsequently. The tinnitus was unaffected in 8 cases. The hearing was improved in 5 cases, unaffected in 4, and deteriorated in 1 case. The operation was at least as easy to perform and as free from danger as an operation on the external semicircular canal, and the Portmann operation had the added advantage that the hearing might be improved.

Mr. C S. **Hallpike** and Mr. A. J. **Wright** described

HISTOLOGICAL CHANGES IN THE TEMPORAL BONES

in a person who had died with slight unilateral Menière's disease. These were similar to those published previously by Mr. Hallpike and Prof. H. Cairns.

ROYAL ACADEMY OF MEDICINE IN IRELAND

At a meeting of the section of anatomy and physiology on May 19, with Prof. J. K. **Jamieson**, the president, in the chair, Dr. E. F. **MacCarthy** read a paper on

Diurnal Variations in Hæmoglobin

by himself and Dr. D. D. **Van Slyke**. He said that diurnal variations of hæmoglobin in the blood of normal people have been reported by many observers, and variations of 20–30 per cent have been recorded in a given subject during the same day The methods employed have not been so precise as those now available Colorimetric methods do not allow for the effect of variations in substances other than hæmoglobin, such as lipids, which may affect the light absorption of the samples Oxygen capacity values can be significantly lowered by the amount of carbon monoxide in the blood of modern man In eighteen young men hæmoglobin determination by Van Slyke and Hiller's manometric CO capacity method were performed at intervals of two to three hours from 9 A M to 11 P M on one or more days The range between highest and lowest values in an individual through a day averaged 1 3 volumes per cent, the greatest range seen in any of the twenty-three observed days being 2 3 volumes per cent, equivalent to 11 per cent of the mean hæmoglobin content for the day Usually the hæmoglobin content was lower in the evening than in the morning, but a subject showing this change on one day reversed it on another The accuracy of this method is shown by the fact that the mean difference between duplicate analyses was only 0 06 volume per cent Dr MacCarthy attributed the much greater ranges of diurnal hæmoglobin variation reported in the past literature to the less accurate methods of analysis He thought the time variations were possibly due to the discharge of some reservoir such as the spleen The main point of the present investigation was to find out what margin of error it was necessary to allow for in assessing the significance of changes in hæmoglobin readings from day to day

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ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

AT a meeting of this society on June 15, with SIR RICKARD CHRISTOPHERS, the president, in the chair, a discussion on

The Sulphonamides in Tropical Medicine

was opened by Dr G A. H BUTTLE He traced the stages in the development of sulphonamide therapy from the discovery by G Domagk in 1935 that Prontosil Rubrum is therapeutically active against streptococcal infections in mice Later in 1935 J Tréfouël, F Nitti and D Bovet observed that the simpler compound sulphanilamide is equally effective, and since then the activity of various sulphanilamide derivatives has been investigated These derivatives can be divided into two classes according to whether the substituents are introduced into the amino group or the amide group of sulphanilamide examples of the former are prontosil rubrum, Prontosil Soluble, Rubiazol, Proseptasine and Soluseptasine, and of the latter Uleron, Albucid and M. & B 693 Substances in the first group probably break down into sulphanilamide, whereas those in the second group are probably themselves the active agents

The first group is on the whole less toxic but also less effective than sulphanilamide—in mice therapeutic doses of proseptasine, which is poorly absorbed, produce a sulphanilamide concentration in the blood of only 1 mg per 100 c cm, this being less than a quarter of that obtainable with sulphanilamide Proseptasine is therefore not suitable for severe or resistant infections Rubiazol, which is like prontosil rubrum with an added carboxyl group, and which seems to break down in the body more slowly than prontosil, is milder in action and relatively non toxic. Soluseptasine and prontosil soluble, given parenterally, are rapidly excreted, so that injections should be given at short intervals Since 5 c cm of either compound is equivalent only to about half of a 0 5 g sulphanilamide tablet, enormous quantities (about 120 c cm daily) are necessary if no preparation is given orally—that is, assuming that sulphanilamide is the active principle Of the second group of derivatives M & B 693 has, Dr Buttle said, a range of activity definitely greater than that of sulphanilamide it has given good results in pneumonia and meningococcal meningitis, and to a less extent in pneumococcal meningitis and in staphylococcal infections Uleron is used mainly in gonorrhœa, except for its effect on the nervous system it is less toxic than sulphanilamide, and the possibility of peripheral neuritis developing may be combated by giving short courses Albucid has given good results in gonorrhœa and no toxic symptoms have been noted with this drug The mode of action of sulphonamide drugs is as yet an open question the essential part of the sulphanilamide molecule for in-vitro activity appears to be sulphanilic acid, but it seems that the amide is necessary in vivo

Filarial elephantiasis appears to have been cured (H. Floch 1936, P Berny and E Gippet 1937, M Advier 1937, M Chabeuf 1938) by small doses of prontosil rubrum or proseptasine—namely, 1 5 g daily for six days The effect is due to the action of the drugs on the secondary infection, and not on the filaria itself

In *malaria* L T Coggeshall (1938) has shown that 0 5 g sulphanilamide, given to monkeys on the first, third and fifth days after infection with *Plasmodium knowlesi*, prevents the appearance of the parasites in the blood altogether, whereas they appear in control animals on the fourth day and death occurs in from nine to twelve days if sulphanilamide is started on the fourth day after infection the parasites sometimes disappear within two days Given before infection it appears to have a prophylactic effect On the other hand with *P relictum* or *P cathemerium* in canaries, and with *P lophuræ* in chicks the drug causes no delay in the appearance of the parasites—the sodium salt of M & B 693 produces a delay of one day only R N Chopra (1939) reports that M & B 693 is more effective than Atebrin in monkey malaria In 5 cases of G P I bitten by mosquitoes infected with *P falciparum*, J A Sinton and others (1939) showed that proseptasine (9 g daily before infection and continued until eight hours after infection) prevents the appearance of parasites (in the one failure the incubation period was twenty-two days compared with eleven days in the control cases) but experiments made by W Kikuth on canaries similarly infected with sporozoites of *P relictum* gave negative results In the treatment of tertian and quartan *malaria* beneficial effects are reported by some authors (D de Léon 1937, Y van der Wielen 1937, R A Hill and M H Goodwin 1937, and R Pakenham-Walsh and A Rennie 1938) whereas others (W E B Hall 1938, G H Paget et al. 1938, and A N. Kingsbury 1938) met with failure, perhaps because of differences in the susceptibility of different strains of plasmodia Dr Buttle pointed out that the drugs do not seem to be nearly as effective in the human disease as in monkeys, so that they are not likely to prove useful in the treatment of established cases in man

Turning to bacterial infections, Dr Buttle referred to the large number of favourable reports on M & B 693 in *pneumonia*, and to the value of

M. & B 693 and sulphanilamide in *meningococcal meningitis*—e.g, R. B. Usher Somers 1939, J. Bryant and H. D. Fairman 1939, and G. Muraz et al. 1938. Experimental *plague* infections of rats and mice have been cured with M. & B. 693 (H. Schütze 1939), and P. Durand (1939) found that M. & B. 693 (2 mg. per gramme body-weight a day) will protect mice against 10,000 m.l d. of *Bacillus pestis* Clinically, J. A. Carman (1937) cured 3 out of 6 cases with prontosil, and R. S. Vine (1938) reported 3 recoveries with prontosil soluble in doses of 5–10 c cm. Sulphanilamide will protect mice infected with 100 m.l.d. of *B. typhosus* culture so that it might be useful in the first week of *typhoid* fever. K. V. Subbarao (1938) reported benefit in one typhoid case on the fourth day, and E. H. R Harries and his colleagues (1939) showed that in the established disease the blood-culture becomes negative although in some cases this takes ten days Clearly more evidence must be awaited before passing judgment. In guineapigs large doses of sulphanilamide render the spleen sterile in *Brucella abortus* fever but infection persists in control cases (R. F. Montgomerie 1938 and B. D. Chinn 1938). The guineapig's spleen is also sterilised in *Br melitensis* infections and good experimental results are reported by E. Æ. Menefee and M. A. Poston (1939), although clinically C. Z. Neumann (1938) reported failure in this infection, but his dosage was inadequate Success has been reported in *Br. abortus* cases but probably many failures are not made public.

The only virus infections on which sulphanilamide has a direct effect, continued Dr. Buttle, are those of trachoma and lymphogranuloma inguinale In experimental mouse infections with *lymphogranuloma* virus injected intracerebrally sulphanilamide gives some protection (F. Bär 1938) and F. O. MacCallum and G. M. Findlay (1938), reported still better results with the glucose compound of 4′ : 4-diaminodiphenyl-sulphone. Clinically, G. R. Hamilton (1938) reports that sulphanilamide, 6 g. daily gradually reduced to 3 g. daily for eight days, cured 13 out of 15 cases; 2 relapsed and it may be that the drug is only effective during the stage of glandular involvement. In *trachoma* the corneal improvement with sulphanilamide is more marked than that of the conjunctiva (B. Lian 1938, F. Loe 1938, and R. Kirk et al. 1938), and E. Burnet and his associates (1939) report similar disparity but greater improvement by a 7 per cent. solution of a derivative of 4′ : 4-diaminodiphenyl-sulphone. W. O. McCammon (1939) reported that in 4 cases of *smallpox* treated with sulphanilamide, 0 65 g three- or four-hourly, the pustular stage did not develop, whereas 3 other cases in the same epidemic all had typical pustules and did not recover so rapidly as the treated cases. In another case (C. King and K. A. de Rozario 1938) the secondary rise of temperature at the beginning of the pustular stage was prevented by treatment with prontosil, 2·5 g. daily. It seems to prevent the secondary streptococcal infection of the skin with which the pustular eruption is associated and thereby renders the disease relatively mild.

Lieut.-Colonel J. A. SINTON held that in malaria the new drugs are not as effective as the old ones. In malignant tertian infection the condition relapses after reducing the dose of proseptasine, and against *P. vivax* he had observed practically no effect. In one case with both *P. ovale* and quartan infection proseptasine, 6 g. daily for six days, was without effect but quinine was satisfactory. In this case proseptasine was continued for eighteen days on account of the patient's septic condition and after an eight days' interval another course was given but still with no effect. However, he believed that a true causal prophylactic action was demonstrated with proseptasine in the 4 malignant tertian cases to which Buttle had referred, and he thought that the problem of tropical rural malaria might be solved by a drug having this action if it was generally applicable to the tropics and if one or two doses would suffice for two or three months. He suggested that better results might be obtained from a sulphonamide which is excreted more slowly.

Dr. PHILIP MANSON-BAHR referred to a case of recurrent staphylococcal ulceration of the hands of two and a half years' standing, for which a distinguished surgeon had contemplated removing both hands. The patient was treated with uleron, and apart from some limitation of movement the condition has cleared up completely. In pneumonia, he said, M. & B. 693 is a miracle—the dullness disappears and the breath sounds become normal within three days. He had treated 5 cases of *Br. abortus* infection (all with a positive blood-culture) with M. & B. 693, 3 g. daily, reinforced with intramuscular sulphonamide, and in all the temperature fell to normal and the siz of the spleen diminished; later there was a relaps but he thinks that this final flare-up may be norma In one case of *Br. melitensis*, proved by blood-culture, the patient was better after the same dosage of M. & B. 693, but he had painful nodules at the site of injection. Dr. Manson-Bahr does not favour this treatment in lymphogranuloma inguinale and climatic bubo in the purulent stage—it is probably necessary to give sulphanilamide at an early stage—and in a case of ulcerative granuloma due to an anaerobic non-hæmolytic streptococcus sulphonamide was without effect. He had seen 2 cases diagnosed clinically as ulcerative endocarditis, and both apparently dying, recover after treatment with prontosil, 30 c cm. daily intravenously, together with sulphonamide by mouth.

Dr. DYCE SHARP said that in one group of 750 cases of tetanus in West Africa the mortality rate was about 50 per cent, but with sulphonamide treatment he had had 5 consecutive recoveries. If the mouth was not open (in 3 of his cases lockjaw necessitated rectal feeding) he gave the drug in water and gum intramuscularly every four hours. Serum was not given since in his view it is useless.

Dr. RAYMOND LEWTHWAITE described experiments in which a group of guineapigs were inoculated with the rickettsia of typhus (tsutsugamushi) and treated during the incubation period with various combinations of prontosil rubrum, prontosil soluble, soluseptasine, uleron, sulphonamide-P or M & B 693. Out of a total of 27 guineapigs 25 had the usual severe febrile reaction and in 2 it was mild. There was no success in the treatment of the established disease.

Dr. N. HAMILTON FAIRLEY said that *B. coli* infections in tropical sprue stand treatment with prontosil or proseptasine well and clear up. He thought M. & B. 693 particularly useful in the fulminating pneumonia associated with chronic malarial cachexia. Clinicians in the East, he said, are particularly apt to give drugs by injection when they might be given by mouth; this practice is often responsible for an inadequate dosage of the drug and for septic infections at the site of injection.

Mr. A FELIX, D.Sc., remarked that from private communications the evidence was against employing sulphonamides in typhoid fever.

Dr. BUTTLE, in reply, posed several questions relating to malaria. What is the effect of the drugs on *P. knowlesi* infection of G P.I. cases? Are the sporozoites of *P. vivax* influenced by prose

He would like to see work on the sporozoite stage in vitro In tetanus R L Meyer (1939), who says tetanus toxin is destroyed in vitro by aerobic incubation with sulphanilamide, has recently reported cure in 80 per cent of mice infected with tetanus spores, but experimental results are not uniform, perhaps because of differences in strain Dr Buttle suggested that in brucella infection sulphonamide drugs given with Brucellin might be more effective He wondered whether tropical sunlight affects the action of sulphanilamide adversely (cf A J Nedzel and L Pincussen 1939) and whether the incidence of hæmaturia after M & B 693 is greater in the East because of the formation of urinary calculi

REVIEWS AND NOTICES OF BOOKS

Clinical Studies in Psychopathology

By HENRY V DICKS, M D Camb., M R C P, assistant medical director, Tavistock Clinic London Edward Arnold and Co 1939 Pp 248 12*s* 6*d*

BY putting together his systematic lectures Dr Dicks has bridged the gap between the classical writings of Freud, Jung and Adler and the loose and occasional writings which have made psychopathology accessible but not necessarily intelligible to the student. The task of "getting over" psychopathology to the student and practitioner is by no means easy Hitherto the data of mental medicine have been confined to the more clinical picture of types of disturbance, and only clinical psychiatry has presented the pathology and ætiology of psychosis systematically Even in the writings of the great pioneers the theory has tended to outrun the clinical aspects of individual cases, so much so that only the analyst has been able to get a really clear grasp of Jung and Freud Dr Dicks has here brought theory and practice together in a volume largely devoted to case material, clearly expounded in the light of current theories To purists of particular schools his sober eclecticism will be an irritant, but to the student eager to know and to understand the nature of psychogenesis, his method of approach will prove a stimulus The chapters deal in an orderly manner with outstanding clinical forms, and the cases give a very fair insight into the mental mechanisms involved Though the expert will join issue with him on many points of theory and interpretation, no student and practitioner, or prospective psychotherapist, can afford to ignore this useful study

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Craniocerebral Injuries

By DONALD MUNRO, M D, F A C S, surgeon in chief for neurological surgery, Boston City Hospital, assistant professor of neurological surgery, medical school, Harvard University London Humphrey Milford, Oxford University Press 1938 Pp 412 21*s*

MUCH more attention is now being paid to the treatment of head injuries, owing to their increasing frequency and the general realisation that end results are often unsatisfactory Provided there has been no gross operable lesion, treatment has hitherto commonly been relegated entirely to the resident and the sister The time honoured formula of at least three weeks flat in bed has been followed, and the cases have been considered to be devoid of clinical interest There are now too many head injuries for the neurosurgeon to accept exclusive responsibility for them and it is up to the general surgeon to undertake a fuller study of the problems involved It is the general surgeon that Dr Munro here sets out to guide

In order to rationalise his treatment Dr Munro discusses first the physiology of the intracranial circulation and of the hydrodynamics of intracranial pressure and then the changes that may *arise* as a result of an injury Although autopsy findings are beyond dispute, their significance and their bearing on the relevant clinical states are at present ill understood The intracranial pressure is not invariably raised in cases of brain injury, indeed at times it is abnormally low, and it is probably unwise to regard this single feature of the condition as the criterion of complex disturbances of the intracranial contents In an endeavour to simplify treatment Dr Munro makes some dogmatic but rather contradictory statements and reaches some doubtful conclusions concerning œdema of the brain and congestion of cerebral vessels Our knowledge of these things is still meagre, and such dogmatism tends to strangle any incentive to further research The clinical aspects of the subject are dealt with exhaustively, every detail of diagnosis and of treatment is discussed, and this section should prove of the greatest value The especial importance of nursing care and of feeding is carefully brought out In the list of alternative methods of feeding an unconscious patient the œsophageal tube might justifiably have been given pride of place, for its use in such cases has probably saved more lives than any other single method of treatment Dr Munro puts great faith in the various methods of dehydration in the non operable group of cases, and recommends that treatment should be controlled by periodic estimations of the cerebrospinal fluid pressure Provided this is done, the repeated employment of magnesium sulphate per rectum, of intravenous injections of hypertonic solutions, and of drainage of cerebrospinal fluid by lumbar puncture is rational Whether the value of these procedures depends entirely on their effect on the intracranial pressure or whether they also exert a more direct effect on the pathological changes is not yet clear, *this field of* clinical research awaits thorough exploitation

In this country convalescence is *graduated* in stages, each advance being dependent on freedom from symptoms Dr *Munro scorns* the value of symptoms, and his first period of convalescence begins "when the intracranial pressure has been re established and fixed at normal," and the patient is then kept for two weeks flat in bed, a period that may be *far too* short in severe injuries to the brain The need *for* the patient's coöperation during his return to a normal life is well recognised, *and the* author is particularly thorough in his management of this critical period His attitude *towards* the post-contusion syndrome is equally critical, and his remarks on exploratory *trephination* deserve careful attention In cases needing *operation* Dr Munro follows orthodox lines, except in the treatment of lacerations and compound fractures "A compound fracture of the skull," he says, "is a problem in sepsis and nothing else" *but* "provided the wound is not manipulated . . . significant radial spread of bacteria does not take place *for* 48 hours . with the exception of hæmolytic streptococci *and* pneumococci" He recommends that a dry sterile dressing should be applied to the wound, and the patient should not be operated on for at least 24 hours after the receipt of the injury "whether or not he is in shock during the period" Débridement is performed during the second 24 hours if the patient's condition allows. This policy of delay is however opposed to principles generally accepted here, for the earlier débridement is performed the lower is the incidence of sepsis, and Dr. Munro's own figures appear to condemn it.

The specialist will find in this book much to stimulate him; he will be informed on such rarities as cerebrospinal rhinorrhœa and traumatic arteriovenous aneurysms, and the bibliography is useful. The general surgeon will begin to realise that head injuries are not so uninteresting after all, and Dr. Munro's sound advice will enable him to treat his patients rationally and get them back to work in the shortest possible time.

The Pneumonias

By HOBART A. REIMANN, M.D., professor of medicine, Jefferson Medical College, Philadelphia. London: W. B. Saunders Company. 1938. Pp. 381. 25*s.*

OF the half-dozen books on pneumonia produced in America in the past few years, this is one of the best. The author has the faculty of analysing and presenting in a compact form the great mass of literature on pneumonia which has lately accumulated, so that in some 350 pages he gives a full review not only of the pneumococcal pneumonias but of the many other varieties as well. After devoting about half the book to all the aspects of pneumococcus lobar pneumonia—the chapter on pathology and pathogenesis is especially good—he goes on to discuss the atypical pneumonias under a bacteriological classification, those caused by cocci, by bacilli, by filtrable viruses (psittacosis is included in this group), and by moulds and fungi. He recognises a primary influenzal pneumonia but is surely unfair to our own workers in ascribing their original researches on the influenza virus to an American stimulus. In the last part of the book are described the pneumonias that arise as part of a systemic infection, for example in tuberculosis, tularæmia and typhoid, and the secondary forms of pneumonia. The author makes many dogmatic statements that would not be universally accepted, and the chapter on the pneumonias of children will not appeal to British pædiatricians. A curious omission, too, is the absence of any reference to the Francis skin test. On the whole, however, Dr. Reimann covers his wide field comprehensively and accurately.

Common Diseases of the Skin

(3rd ed.) By R. CRANSTON LOW, M.D. Edin., F.R.C.P.E., F.R.S.E., consulting physician to the skin department, Royal Infirmary, Edinburgh; formerly lecturer on diseases of the skin, University of Edinburgh. Edinburgh: Oliver and Boyd. 1939. Pp. 319. 10*s.* 6*d.*

THIS handbook, which is based on Dr. Cranston Low's lectures to his students, is clearly written in plain straightforward English. The opinions expressed are the author's own, based on many years of clinical observation, and as might be expected they are sometimes at variance with orthodox teaching. Thus, in impetigo it is hard to agree that Ung. hydrarg. ammon. should never be used, for although it is not ideal it is so often employed with success as to have become the standard remedy. A small daily dose of ultraviolet light, probably the best treatment of all, is not mentioned. For furunculosis boric and starch poultices are recommended, but the usual experience is that these tend to produce satellite boils. There is no mention of magnesium sulphate paste or solutions of ichthyol, both more reliable methods of treatment. The section on ringworm is well done, but the common interdigital ringworm of the feet is only given a few lines, whereas ringworm of the beard, a rare disorder nowadays, is given a page and a half. Dr. Low's well-known theories as to the causation of eczema are interesting but not conclusive, and his statement that all cases of dermatitis should have a daily warm bath and that soap used once a day does no harm if it is washed off afterwards is contrary to the usual advice given to such patients. The treatment advised for dermatitis autophytica—unmasking the patient and confronting her with evidence that the lesions are self-produced—may be successful as regards the skin lesions, but there must be a grave risk of starting an altogether different set of symptoms. It is better to hand these cases over to a skilled psychologist as soon as a diagnosis of self-produced lesions is made. The sections on lupus vulgaris and on growths of the skin are good.

The illustrations, and especially the histological diagrams, are excellent, and in spite of its shortcomings this book will appeal to many who want a clear outline of the subject.

Studies of Trauma and Carbohydrate Metabolism

With special reference to the Existence of Traumatic Diabetes. By VIGGO THOMSEN. Copenhagen: Levin and Munksgaard. 1938. Pp. 416. D.Cr 15.

A CLAIM for compensation on the grounds that diabetes mellitus developed as the result of an accident may present a problem of some difficulty. Since the experiments of Claude Bernard it has been realised that a transient glycosuria may follow stimulation of the central nervous system, and the hyperglycæmic action of shock, physical or mental, is now clearly recognised. Nevertheless one cannot be certain that if a persistent diabetes develops after shock or injury the trauma was indeed the main cause of the permanent derangement of metabolism. Dr. Thomsen gives first an extensive survey of past research on this problem, and then a detailed account of his own careful experiments. Determinations of blood sugar level and of sugar-tolerance curves, together with tests for glycosuria, were carried out on accident cases admitted to hospital; the results showed that a temporary disturbance in carbohydrate metabolism occurred in over half of the injured but otherwise normal persons. The incidence of such disturbance was greater in older than in younger patients. The abnormality of the sugar-tolerance curves was less after treatment with ergotamine, suggesting that the abnormality might be associated with activity of the sympathetic nervous system. Although injury may cause exacerbation of an existing diabetes, the increased intensity of the condition is usually not permanent, and it seems unlikely that a persistent diabetes can be induced in a previously non-diabetic person by physical accident. Very mild cases of diabetes which have given rise to no obvious subjective symptoms may become easily recognisable after trauma because of a temporary exacerbation. Continued tests may show that although the temporary increase in intensity disappears, a slight glycosuria may remain. In such a case trauma is not the cause of the diabetic condition, but the cause of its recognition.

Although the English translation is not smooth enough to make easy reading, this comprehensive account of what is known of the relation of trauma to carbohydrate metabolism is well worth having.

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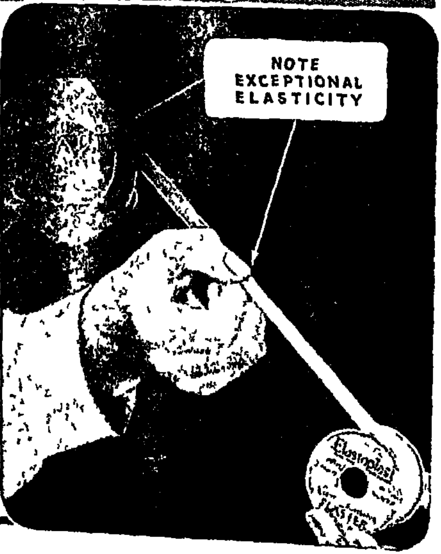

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THE LANCET

LONDON SATURDAY, JUNE 24, 1939

PENSIONS FOR SPINSTERS ?

PEOPLE with grievances are never popular—least of all those whose demands involve heavy claims on the public purse It says much therefore for the courage and persistence of the National Spinsters Pensions Association, and particularly of their leader Miss FLORENCE WHITE, that the Government agreed last year to appoint a committee to inquire "as to the position of unmarried women under the Contributory Pensions Act, and on the practical questions which would arise if the age at which Old Age Pensions under those Acts are payable to unmarried women were lowered" This committee seems to have been unable to come to any very definite conclusion[1] Much of the spinsters' case failed to survive the cold light thrown upon it by the Government actuary and appears to have been based on misconceptions due to the extreme complexity of the finance of the insurance acts *For example, in deploring their* inability to leave a pension to dependents, as a man can leave pensions for his widow and orphans, the spinsters apparently forgot that they pay only half a man's contributions The plea that middle-aged spinsters of today should be called "war spinsters" because the men they might have married were killed in the late war has brought to light the curious and almost forgotten fact that in the years before the war—for reasons never quite clear—an increasing number of men were remaining unmarried Not only did the war cause a sudden rise in the marriage-rate but its effect in this respect was lasting, for the rate has never fallen to its former low level Hence the Government actuary was able to assure the spinsters that they would not, statistically speaking, have been married even if there had been no war

The committee nevertheless agreed that the main contentions of Miss WHITE and her supporters contain some substance In the first place, it is established that unmarried women's contributions are used, to a small extent, to pay for pensions to widows and orphans, and the N S P A maintains in effect that men ought, collectively, to pay for their own widows and not ask spinsters for contributions to a benefit they have only a remote possibility of enjoying KIPLING's sea captain who jeeringly promised his rival "and I'll be good to your widows, Rubo, as many as I shall find," was speaking as man to man and would hardly have expected his unmarried women friends to contribute The committee believes that the spinsters should pay something for a potential benefit, but the majority agree they are now paying too much The most serious grievance, however, is that widows (under a complicated series of enactments) receive 10*s* a week pension at an average age of 55½, whereas all spinsters have to wait until 65 This is felt to be an indefensible inequity It is common knowledge that the position of an ageing spinster is often a tragic one She has, according to the Government statistics, at least as great difficulty in making a livelihood as the widow, and a much greater difficulty than the younger woman. In some large occupations her chance of retaining a job diminishes seriously every year after 30, and superior skill and experience count for little A woman so placed will naturally compare her own lot unfavourably with that of the pensioned widow who works no harder but enjoys that extra weekly 10*s* which in the popular phrase "makes all the difference" *Unfortunately* these anomalies are easier to state than to remedy The widow cannot be deprived of her early pension—though whether she should ever have had it if childless is another matter The cost of "evening-up" by giving pensions to spinsters at 55 would amount to £5,800,000 per annum extra in ten years' time Further, it would, as *the report* shows, be almost impossible to withhold the privilege from all other insured women and even from the uninsured wives of insured men To cover these new benefits the women's weekly contribution would have to be raised *from 5½d to 1s 5d* a week and large contributions from the Exchequer would be required as well

At this stage it becomes necessary to ask whether a nation with an increasing proportion of aged persons in the population is in a position to grant pensions to any large section at an earlier age In the years ahead more and more of the public will be in bath-chairs, and relatively fewer will be available to pull them along If the bath chairs take up all the time and energy of the able-bodied, what about the perambulators whose occupants are the means of carrying on the race ? Can we afford to let millions of women subside into bath-chairs *at 55 ?* The health aspect of this knotty problem, which is barely touched on in the report, should not be overlooked *It is pointed out that many women of 55 are perfectly fit for work,* though many are worn out by the hardship of their *lot* *Between* 60 and 65 10 per cent of insured spinsters are drawing disablement benefit, and a great deal of the reluctance to employ women over 50 is due to not unfounded doubt about their physical fitness But it seems wholly unnecessary that such large numbers should be thrown prematurely on the industrial scrap-heap Progress in industrial hygiene and a higher standard of living for the individual worker may do much to preserve the wage earning capacity *up* to an age when pensions can be granted without casting an intolerable burden on the community

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[1] Report of the Committee on Pensions for Unmarried Women. London: H.M Stationery Office Pp 78 1s 3d

THE MISUNDERSTOOD BOWEL

Radiography has changed our conception of the movements of the large intestine. It is now recognised that the fluid contents of the ileum pass fairly continuously into the cæcum and ascending colon, which are filled by pressure from above. At intervals a mass movement takes place which propels the fæces rapidly along the transverse colon and into the sigmoid This movement may produce a call to defæcation or may merely fill the distensible sigmoid. The colon thus normally contains a considerable quantity of food residue, fluid in the proximal section and more solid in the distal, the greater amount being in the cæcum and sigmoid. This fact has been confirmed at autopsy on soldiers and others who have died violently, as well as on the X-ray screen by Fiessinger and Hutet.[1] The normal colon is largely filled with a mixed residue of the meals taken in the previous two to five days, and this fullness causes the host no discomfort The call to defæcation is produced by distension of the rectum, due either to fæces being pushed in by the mass movement from above, or to an enema from below. Defæcation empties the whole of the left colon and sigmoid, leaving mainly liquid fæces in the cæcum and ascending colon.

So much for the healthy gut. Fiessinger and Hutet[2] have lately given patients on a normal diet a small amount of barium emulsion before their evening meal for several days, and have followed its progress radiologically. They find that there is actually little difference between the colons of normal and constipated people: both contain the mixed residues of several days. In the constipated person, however, the mass movement that carries the fæcal column onwards from the hepatic flexure is ineffective, so that there tends to be an accumulation of fæces in the proximal half of the colon. In slightly costive people—those whose bowels open sometimes without help and sometimes need the aid of mild laxatives—the large intestine is nearly full. Paradoxically it is only the severely constipated who have an empty colon—those who take regular purgatives or a greatly restricted diet. In such cases the patient may develop an abnormal sensibility to the fullness of his colon, and the desire to keep it empty may become an obsession. Even when it is empty, spasm associated with irritation of the mucous membrane may still give a sensation of fullness. This form of constipation, which is common enough, Fiessinger and Hutet call "constipation by deficit."

Defæcation is a conditioned reflex shared by man with other house-trained animals, and all cases of functional, as distinct from organic, constipation are due to interference with this reflex. To the layman constipation is difficulty with defæcation, whatever the cause, and he bases his diagnosis on the absence of the regular daily sensation of distension in the rectum which is the detonator of the reflex In some cases persistent inhibition of the reflex may have reduced the sensibility of the rectum so that its owner no longer knows when it is full, and here cure must depend on training and encouragement But usually any but the smallest quantity of fæces in the rectum produces discomfort, and defæcation will be normally carried out if the rectum is regularly filled. To attain this goal the constipated person must aim at keeping his colon full, not empty, so that he can take advantage of the mass movement in the colon when it comes. This calls for a high-residue diet rich in fruit and vegetables and the substitution of purgatives by mucilages such as psyllium seeds which add bulk to the fæces Such measures can be seen radiologically to restore the normal filling of the colon, and with it a daily action of the bowels. These facts cannot be too widely advertised among our purgative-ridden generation seeking for a sign.

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1. Fiessinger, N , and Hutet, G , *Arch Mal Appar dig* 1933, 23, 689
2. Fiessinger and Hutet, *Pr. méd* April 22, 1939, p. 611.

ASSAY OF SEX HORMONES

Besides being an indispensable means of standardising important therapeutic materials, the biological assay of sex-hormone activity is a potentially valuable means of estimating endocrine function in individual patients. The soundness of the methods employed is accordingly a matter of concern not only to the laboratory endocrinologist but also to the clinician If the latter is to prescribe hormone preparations which are not chemically pure substances, and which therefore have to be assayed on laboratory animals, he must have confidence in the system of biological assay. Again, if he seeks help from the laboratory in making a diagnosis, and is told that the urinary excretion of a hormone deviates from the normal, he must be sure that the methods used are quantitatively accurate. For these reasons the publication of two critical studies[1 2] on these subjects will be welcomed, though their conclusions are in some respects disturbing.

The Medical Research Council has for many years promoted research into biological standardisation, and the report by Mr. Emmens on the variables affecting the estimation of androgenic and œstrogenic activity illustrates the traditional combination of painstaking laboratory work with statistical appraisement of the results. Though the mathematical treatment appears formidable, this very technicality will be a virtue if it convinces the less specialised reader that proper "hormone assay" is more easily said than done. The first section deals with the technique of assaying crystalline œstrogens (œstrone, œstradiol, and œstriol) on ovariectomised mice, the effect of changes in sensitivity of the colony of mice, and the factors—such as subdivision of the dose injected, and presence of augmentor substances—which may influence the response and entirely alter the apparent relative activity of

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1 Reports on Biological Standards V Variables Affecting the Estimation of Androgenic and Œstrogenic Activity By C W Emmens, M.Sc *Spec Rep Ser Med res Coun, Lond* No 234 London: H M Stationery Office 1939 Pp 71 1*s* 3*d*
2. Comparative Studies Concerning the Strengths of Œstrogenic Substances By K *Pedersen-Bjergaard* London: Humphrey Milford, Oxford University Press 1939 Pp 198 15*s*

œstradiol or œstriol in comparison with international standard œstrone The second section covers the application of these methods to impure œstrogenic extracts from urine Here the effect of augmentor substances present in the extracts themselves is unavoidable, and considering that several œstrogens are probably present, it is thought impossible in practice to arrive at a trustworthy estimate of their nature or amounts Analogous investigations on the biological assay of the androgens are recorded here the difficulties are of the same kind, but less serious The remainder of the report deals with the factor of variation in mice and capons as it is found in sex-hormone assays Innate differences, probably genetic, contribute most largely to individual variation, but there is also a time-to time variation in the sensitivity of a colony as a whole which is still unexplained

Dr PEDERSEN-BJERGAARD is concerned with a more limited field, surveyed in greater detail After an admirable summary of what is known of the occurrence and properties of œstrogenic substances and of methods for their assay, he describes his own inquiries, which are particularly directed to the comparative assay of œstrogens in terms of standard substances and to the way these apparent comparative strengths vary with the animal employed and the method of administration The conclusions are unequivocal the international œstrone standard, he finds, can be used only in the assay of œstrone preparations, and the œstradiol-monobenzoate standard in the assay of œstradiol-monobenzoate preparations The comparison of other œstrogenic substances, mixtures of substances, and crude œstrogenic extracts with the standard preparations gives results that vary so enormously with methods of administration that no numerical expression of relative activity is possible These conclusions are analogous with those of EMMENS on the comparison of œstradiol, œstriol, or urine extracts with œstrone, and it seems that biological standardisation of œstrogenic therapeutic substances is illusory except when the materials are either of the simple substances œstrone or œstradiol monobenzoate, in which case the appropriate tests of purity should be the accurate and sensitive ones provided by measurement of physical and chemical properties, and the unit should be a weight and not a conventional "international unit" It is indeed unsatisfactory that the clinician should depend on a statement based on biological assay when either a more accurate physical or chemical test of purity is available or else the assay is untrue because the activity of the material can only be estimated, in a conventional way, by comparison, in a non-human species, with a standard substance with which it is actually incommensurable Fortunately there is a tendency to state the doses of pure œstrogens and androgens in weights, and there has been no movement towards calibrating the dosage of the new synthetic œstrogens in any way other than in terms of weights of pure substance administered to human beings

As regards hormone assays for diagnostic purposes, the words of the preface to the Medical Research Council report may be quoted "It is evident that, in the cases of both œstrogens and androgens, premature confidence in the functional significance of crude and empirical determinations of biological activity is likely to hinder progress, and that better chemical methods of separating small quantities of the different active principles are urgently needed" Laboratory diagnosis of minor abnormalities of endocrine function by biological examination of blood or urine is on an unsound foundation, and to place it on a sounder one is likely to prove one of the hardest tasks of biological microchemistry

ANNOTATIONS

THE PHYSIOLOGY OF THE SEASIDE

In a paper read at Poole before the Royal Sanitary Institute, Dr Maule Horne puts in a strong plea for the medical study of climate[1] Analysis of the operative factors in climatic and weather changes, which certainly affect sensitive persons, and analysis of the clinical reactions that appear to accompany them are two related branches of study which have lately made good progress in America and upon the Continent The aim of 'bioclimatology," as this new branch of science is commonly called, is to measure the reactions of the invalid or convalescent to his physical surroundings, in order to make it possible to utilise these atmospheric and other external influences to the best advantage Much time and money are lost by ill chosen holidays without regard to the local climate and the season of the year, and for invalids and convalescents the choice of a climatic resort without sound medical guidance may be positively harmful To fill the present wide lacuna in our knowledge the health resort, in Dr Maule Horne's phrase, must be thoroughly "dissected" A classification according to results is called for, and for this classification it is necessary to investigate by physiological methods the reactions induced at each place in individuals affected by various forms of ill health Practical steps towards further analysis of the medical value of the coast for delicate children from the cities have been for some time under consideration, and we understand that a beginning may shortly be made both at Margate and at Poole

TREATMENT OF TOXIC GOITRE

SINCE its introduction for the treatment of toxic goitre, it has been widely held that iodine should be reserved for cases in which operation is to be performed and that the preoperative course of iodine therapy should not last more than 10–14 days, lest the patient should become iodine refractory and her condition deteriorate After such a course, it has been said, responsiveness to the drug does not return for two or three months While these views are by no means superseded, they are now more commonly questioned, and it is believed by some that the efficiency of iodine remains constant—the that it wears off being attributable to variations in the intensity of the disease. Whether this is true or not, many patients are today treated with iodine when operation is not contemplated; and many are given the drug for longer periods than 14 days before operation; especially as there are frequent exceptions to the rule that an iodine-free patient can be made fit for operation in this time.

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[1] *J R San Inst* May, 1939, p 711

As Lehman and Shearburn[1] point out, the criteria of fitness for operation in cases of toxic goitre are not easily laid down. Having studied the postoperative course of their cases in relation to the preoperative condition and treatment they find on the whole no correlation between the length of preparation and the severity of the postoperative reaction; and this also applies when only a group of cases having initial basal metabolic rates between +36 and +45 are considered A classification according to severity (as measured by the initial B.M.R.) also shows no simple relation between the different groups and the postoperative reaction. This inconsistency may be explained by the fact that the B.M.R. does not indicate the true severity of the illness; it takes no account of the extent of visceral damage. At the time just before operation moreover the disease may be in an upward phase in one person and a downward phase in another.

Lehman and Shearburn's observations suggest that there is no advantage in prolonging iodine treatment once the patient appears to be safe for operation. As to what constitutes a safe condition they conclude that no rigid rules are useful, each patient being a separate problem But evidently the experienced clinician can say with considerable accuracy when a patient is ready; for in expert hands thyroidectomy has become one of the safest of major operations.

FLYING AT MODERATE ALTITUDES

IT is widely supposed that repeated flights at a height of, say, 15,000 ft help the airman to acclimatise himself to low atmospheric pressures Monaco[2] holds that, on the contrary, they are harmful. The aviator's acclimatisation to high altitudes differs from that of a mountaineer; for the pilot stays only a very short time at the new level and quickly returns to the ground. Gradual adaptation to new conditions is thus rendered impossible, and according to Monaco the frequent alternation between extremes upsets the physiological mechanism. Whereas a stay on a high mountain induces an increase in the number of erythrocytes, repeated high flights cause, after a time, anæmia. True, an increase in red blood-cells has been observed in airmen, but Monaco says that it is merely temporary, is due to *anoxæmia*, and can only be demonstrated during and immediately after a single high flight On the pilot's return to earth it soon disappears and is succeeded by a progressive fall in the number of erythrocytes Monaco claims that the results of his experiments are confirmed by the practical observations of Martin Flack and his collaborators that pilots after repeated high flights become less tolerant of them; and of Armstrong[3] that symptoms of intolerance are manifested by American commercial pilots flying not more than three hours a day at an average height of 7500–13,500 ft He also reports that in Italy, during a period of ten years, sickness has been 56 per cent. higher among airmen than in the other services, despite a strict medical examination on entry. The trouble is ascribed to the deficiency of oxygen at high altitudes and the consequent lowering of the oxygen tension in the alveoli, producing anoxia of the tissues, shown chiefly by a diminution of reflexes. Monaco cites Strughold and Treutler as showing that even at a height of only 7500 ft. there is an obvious diminution of the patellar reflex if a respirator is not used, and he concludes that a respirator should always be worn after a height of 6000 ft. has been reached—preferably one containing a mixture of gases and with a pressure of oxygen gradually increasing pari passu with the alteration in barometric pressure.

CARCINOGENS IN HEATED ANIMAL FATS?

TEN years ago E L Kennaway found that substances carcinogenic for the skin were formed when living cells, such as yeast cells or human skin, were subjected in a hydrogen atmosphere to temperatures of 700°–900° C. in such a way that slow destruction with the formation of tarry material was brought about The same thing happened when cholesterol, a constituent of all living tissues, was treated in this way. When tarry material thus obtained was applied to the skin of mice malignant tumours developed at the site of application The carcinogenic effect produced was a local one. Taking these observations as his starting-point, Prof E. M. P Widmark of the University of Lund has treated the skin of mice with alcohol- or petroleum-extracts of roasted coffee, browned butter and horse muscle heated to 275° C. The results, which he summarises in a preliminary note in *Nature* of June 10, are very puzzling. When the skin was painted with the extracts no effects were observed in the skin, but of 23 female mice which survived a period of application, 9 developed carcinoma of the mamma; no such tumours developed in the males It will be noticed that in these experiments, unlike Kennaway's, the carcinogenic effect was not a local one. Of 26 control animals (sex not stated) treated with extracts of the same foodstuffs not previously heated only 1 developed a tumour in the mamma.

The incidence of spontaneous tumours in the untreated female mice is stated to be 10 per cent. and the appearance of such tumours in 9 of the 23 treated animals seems unlikely therefore to have been fortuitous. But to explain this result is not easy It is now well known that mammary tumours can be produced in mice by painting the skin with solutions of œstrogenic substances, although the skin itself remains intact. But in such experiments the males develop mammary carcinoma almost as readily as the females, and even if prolonged treatment with œstrogens does not produce tumours of the breast it promotes development of mammary-gland tissue in the males, together with atrophy of the testis. In females, again, such treatment leads to changes in the uterus and vagina readily visible to the naked eye, and Prof. Widmark makes no reference to the presence of such changes One would therefore have to consider whether his tumours were due to a new group of substances which, though devoid of œstrogenic activity, are specifically carcinogenic for the mamma. Before inquiring into this possibility it will be advisable to await the publication of a detailed paper, which is promised, and the confirmation of the findings by other workers.

Widmark does not mention the publications of Prof. A. H. Roffo of Buenos Aires, who for a number

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1. Lehman, E. P., and Shearburn, E. W., *Ann Surg* May, 1939, p. 712.
2. Monaco, B, *Ann Igiene, Roma*, April, 1939, p 249
3. Armstrong, H. G., *J. Aviat Med* 1938, 9, 84

of years has been studying the effects produced in cholesterol by irradiation, by which this substance acquires carcinogenic properties when applied to the skin Similar chemical changes can be brought about by heating cholesterol, and last year Roffo[1] published a detailed report in which he claimed to have produced cancer in the stomach of rats fed for about two years on a diet of bread and milk with the addition of equal parts of animal fats containing cholesterol, heated for thirty minutes to 350° C A large number of animals were used and the paper is copiously illustrated with photomicrographs These certainly show ulcerations and extensive hyperplasia of the gastric mucous membrane which Roffo describes as carcinomatous But there were no metastases and the histological evidence for the malignancy of the lesions produced is, so far as one can judge from the photographs, not convincing The lesions may have been due to the direct action on the gastric mucous membrane of the cholesterol chemically altered by heating, but there is also the possibility that they resulted from interference with the usual gastric functions, caused by excess of fat in the diet

The verdict on the allegation that the processes used in preparing food—such as frying, roasting and grilling—may produce carcinogenic substances is therefore "not proven" But in view of its importance the subject should be fully investigated There appear to be two distinct questions that require an answer The first is, Do these processes of cooking produce substances which, when tested by the usual method of applying them to the skin, give rise to skin cancer, or, as Widmark claims, mammary cancer? The second question is, Do these substances when ingested produce gastric cancer? If the answer to the second question is "No" the answer to the first would be mainly of academic interest In order to exclude from the feeding experiments the possible fallacy of producing digestive disturbances by an excess of fat in the diet, it would perhaps be well to give the experimental animals the heated fats in the form in which they are usually consumed in actual foodstuffs, such as meat or fish which has been roasted, grilled or fried

THE NATURE OF CREATIVE ACTIVITY

HITHERTO the study of creative activity has been the preserve of the philosopher and the art critic The few psychologists, like Vernon Green and Bullough, who have experimented in psychological æsthetics, have not been in a position to use clinical material to substantiate their theories In fact, it is doubtful whether they would have thought it possible that either psychological medicine or neurology could have helped very much Psychiatrists have for a long time been interested in the paintings and modellings of psychotics, but the art critic has spurned their intrusions Shaw rapped Max Nordau over the knuckles in his "Sanity of Art," and Roger Fry, more gently perhaps, replied to Freud in "What the Artist wants of Psycho analysis" Nevertheless, psycho analysis has illuminated the deeper issues involved in the artistic creative impulse, explaining the obscurities of artistic content, the choice of material, and the wish fulfilments of the artist Not enough however, has been done to explain the processes in painting and sculpture which are so obviously associated with the conditions of visual experience and other sensory components have not been adequately explored

In studying the peculiarities of primitive art, children's drawings and psychotic productions, Dr Viktor Löwenfeld[1] of Vienna has appreciated the importance of direct visual experience in the normal artistic vision, he has also realised the importance of tactile and kinæsthetic sensibility, which art critics like Berenson have disclosed in the "tactile values" expressed by certain paintings, for example Massacio and the early Botticelli Spanish critics have tried to correlate El Greco's distortions with his alleged myopic astigmatism Dr Löwenfeld has confined his research primarily to the artistic productions of the blind and the partially blind These people use non-visual imagery because they must, and consequently tactile and kinæsthetic values enter into their creative activities The haptic type is above all concerned with projecting his inner experience into the picture Such experience adds a new dimension to the work In fact Dr Löwenfeld's researches go a long way to explain many characteristics of primitive art, modern expressionism and so called distortions His thesis is a solid contribution to psychology and is calculated to add much to artistic criticism and to a future science of æsthetics

NITROUS FUMES

MEDICAL students will recall the acrid, not altogether unpleasant, fumes when they dissolved copper or silver in strong nitric acid In lesser degree the same smell is sometimes apparent in the street on the leeward side of a brazier used by workmen Nitrous fumes are in fact generated whenever air is heated strongly either by flame, glowing fuel, or hot surfaces of any kind What is not very generally known is that nitric oxide may be poisonous in any concentration above 1 in 100,000, a dilution of 1 in 10,000, although it seems mildly irritant only to throat and chest, is dangerous to life if inhaled for a few minutes In a case investigated by Dr R L Guthrie at Poplar in 1934 death was shown to have been caused by nitrous fumes given off from an acetylene superwarmer used in the *Dunbar Castle* when lying in the West India Dock An inspector of factories then stated in evidence that 102 parts per million of nitric oxide were given off when the appliance used by the dead man was tested in the ship Medical evidence proved that death was due to asphyxia caused by the fumes A. Holste records[2] several cases of nitrous fume poisoning of firemen, one of whom developed œdema of the lungs which proved fatal, while an increase in hæmoglobin and red blood-cells was common to all Recently R J Wright-Smith described[3] a case in which death from intense pulmonary œdema and acute bronchiolitis followed a job of welding for eight hours in a closed tank which had contained sea water In this case phosgene poisoning was not excluded, they have in common an interval of well being which may lead the victim to carry on long after he should have reported sick

The *detection* of nitrous fumes is important in view of the probability that they may be evolved in dangerous amounts during many industrial operations carried out with the aid of heat Leaflet No 5 of the valuable series issued by the Department of Scientific and Industrial Research (H M Stationery Office 3*d*) describes a trustworthy method of detection, based on the diazo reaction of P Griess which is specific. Any primary amine of the aromatic series will react with nitrous acid to form a diazo compound, and this in the presence of another base will yield a more or less coloured azo compound One of the best combinations of bases for this reaction is sulphanilic acid (which functions as a base) and α-naphthylamine, suggested by Ilosvay, which yields a strong pink to crimson colour. The reaction was at one time held to be too sensitive, but the Griess-Ilosvay reagent is now recognised as the most satisfactory for the unfailing detection of nitrous acid in air or water. The syringe described in previous leaflets is used for bubbling known volumes of air through the reagent and the number of strokes of the piston required to produce a standard tint is used as an inverse measure of the concentration of nitrous acid in the air. The test is simple and should be used whenever there is reason to suspect the presence of nitrous acid in concentrations higher than those normally found in air.

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[1] *Bol Inst Med exp Cancer* 1938, no 48, p 407

[1] The Nature of Creative Activity London Kegan Paul, Trench Trubner and Co 1939 Pp 272 21s

[2] *Zbl Gewhyg* 1936 23 183

[3] *J industr Hyg* 1939, 21 24

First-aid should be rendered by removing the affected person from the contaminated air and keeping him warm and at rest in the prone position He should be given tea or coffee (not alcohol) and only removed to his home or hospital under medical supervision in an ambulance Inhalation of oxygen may be necessary to make up for the hæmoglobin which has been converted into methæmoglobin

QUESTIONS ABOUT HEALTH

THE private practitioner who is inclined, in his more antibureaucratic moments, to wonder how public-health officers fill in their time, may derive a certain savage satisfaction from reading a paper by Robert Oleson,[1] assistant surgeon-general of the United States public-health service It seems that badgering the P.H.S with questions about health is a recognised pastime among all classes of American citizens Oleson's study of 10,000 of these inquiries tends to discredit the view that the female of the species is more curious than the male, for about half the communications come from either sex New York, with 1373 questions, is easily the most insatiable of the states, with Pennsylvania (806) and District of Columbia (532) second and third Question-time reaches its peak in March and again in October; but, as might be expected, there is a slump during the summer when illness is largely forgotten in holiday distractions. The subjects of inquiry cover an almost unlimited range; from the value of chicken gizzard in the treatment of cataract to the age of the youngest human mother; from the medical use of garlic (20 questions on this) to the name of a solution that will toughen the skin of the hands and so make them less susceptible to cold; from the advantages of mechanical dish-washing to the constitution of fluids suitable for embalming Nearly 800 questions were concerned with the efficacy of drugs, nostrums, cosmetics and dentifrices So far, so good; but included also in this group were inquiries about remedies prescribed by doctors in attendance on the inquirer, his friends or relations, and such lack of faith is to be deplored Though most are content to seek information, others are anxious to give it, or rather to sell it Inventors of panaceas are willing to part with their secrets for paltry sums ranging from a hundred thousand to a million dollars One correspondent has a scheme for flood-lighting cities with ultraviolet, infrared and cathode rays, thus rendering them germ-free; another would treat toothache, earache, indigestion, rheumatism and (of course) high blood-pressure, to say nothing of "light cases of paralysis," with ten drops on sugar thrice daily of a mixture of gasoline (one gallon!) and pepper (3 drachms), adding, with charming naïveté, that it is "good for almost any disease" Infantile paralysis evokes a great deal of amateur attention; one of the more exciting theories of causation put forward is that it is due to over-abundance of sexual energy, and the removal of the sex glands is recommended as a prophylactic, and therefore presumably routine, measure Massage with polecat oil, though less drastic, is little more attractive as an alternative

Oleson rightly girds at the lazy student or professional writer who pesters the P.H.S for data readily obtainable by library research He points out that whereas the P.H.S has no wish to shirk its legitimate duty in providing information, enlightenment could often as easily, and more rapidly, be obtained nearer home Thus local libraries, the family doctor, or the state department of health, in that order, should first be approached.

A NEW TRANSFUSION APPARATUS

THE collection and administration of blood for transfusion has become so topical a subject that any modification of technique adopted in other countries merits our critical examination. Prof Hustin and Dr. Dumont[1] claim that a modification they have introduced has reduced the accidents of transfusion from 12 to 3 per cent. in 93 transfusions by lessening the chances of clot-formation and of damage to the blood-platelets. The more effectively clot-formation is eliminated from the apparatus, they say, the less likely is a reaction. In their view the clot does not cause a reaction by its embolic action so much as by the liberation of toxic substances, and this they support by animal experiment. Certainly any surgeon whose duty it is to bleed a number of donors will agree with them that the commonest site of clotting is in the actual lumen of the needle They contend that forceful mixing of the blood and anticoagulant, as with a glass stirring-rod, damages the cellular elements of the blood, notably the platelets If a suspension of platelets in citrate solution is injected into cats no reaction results, but if the same suspension is first vigorously agitated in a vessel containing beads violent vasomotor reactions may be produced, presumably because the damaged platelets give rise to some toxin. They therefore divide transfusion reactions into two types: first, those due to incompatibility of the blood, where the clinical picture is one of cyanosis, palpitation, flushes, and pain in the loin; secondly, those due to liberation of toxic substances by blood-clot and damaged platelets, the clinical picture being one of rigors, fever, urticarial rashes and œdema In the latter group there is of course no evidence of the excretion of hæmoglobin and its derivates in the urine. The apparatus employed closely resembles that described by Riddell[2] Suction is provided by an eccentric cam that compresses a rubber tube, after the principle of Henry and Jouvelet.[3] A second rubber tube, connected to a glass tube which dips into the citrate solution, is led direct to the needle, so that it is possible by reversing the direction of the pump to drive the citrate back from the needle into the vein of the donor, thus washing the lumen of the needle The elimination of clots, however small, during the collection of blood is clearly important, as is the necessity for mixing the blood and anticoagulant gently, but this apparatus seems unnecessarily elaborate for the purpose, and is not likely to find favour for the withdrawal of large quantities of blood by not particularly skilled personnel The principle of suction within a closed circuit is, however, a definite step in the right direction, for it eliminates all sources of extrinsic infection and precludes any diminution in the rate of flow due to clotting in the needle or collecting tube Such suction can be as efficiently and more cheaply provided by any theatre suction pump or by a reverse *Dunlop tyre pump* after the method of Marriott

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[1] Oleson, R, *Publ Hlth Rep Wash* May 12, 1939, p 765

[1] Hustin, A, and Dumont, A, *Surg Gynec Obstet* May, 1939, p 940

[2] Riddell, V, *Brit med J* June 3, 1939, p 1125

[3] See *Lancet*, 1935, 2, 1242

VIRUS OF JAPANESE ENCEPHALITIS IN VITRO

For the time being, at any rate, cultural investigations of the virus of encephalitis of the "Economo" or "European" type have come to a standstill, through lack of new material, but it is otherwise with the work on the virus of the so called Japanese encephalitis Strains were isolated from cases during the summer epidemic of 1935, by intracerebral inoculation of mice and monkeys, and the virus has since been studied by a large number of workers in Japan, who have reported on its transmission and biological properties Recently Kawakita,[1] working at Tokyo Imperial University, has recorded the results of its cultivation in vitro The method he adopted was essentially that recommended by Maitland and Maitland[2] for the propagation of vaccinia virus in vitro In his experiments the *allantoic fluid* of a *developing* hen's egg was generally used, and he claims that this particular medium has not been previously employed for the propagation of virus in tissue culture Four strains of the virus were successfully grown and actual multiplication was clearly demonstrated The experiments satisfy Kawakita that cultivation in this way is as sensitive as direct intracerebral inoculation of mice for the detection of minimal quantities of this virus

THE CONGRESS OF GENETICS

The seventh International Congress of Genetics is to be held in Edinburgh from Aug 23 to 30 The outstanding consequence of the 1927 congress in Berlin was the impetus given to work on the induction of mutation by means of X rays, while the congress at Ithaca in 1932 is said to have achieved "the final amalgamation of cytology and genetics and the emergence of physiological genetics" The theme suggested for Edinburgh is the harnessing of genetics to agriculture, medicine and sociology, and prominence will be given to the breeding not only of animals but also of plants—the vast importance of which is brought out by Prof Ruggles Gates, F R S, in the lecture we publish on p 1472 The seven sections of the congress are devoted severally to gene and chromosome theory, cytology, physiological genetics, animal breeding, plant breeding, human genetics, and genetics in relation to evolution and systematics There will also however be sub*sections* on statistical genetics and on the genetical aspects of growth (both normal and abnormal), and members interested in special topics, such as the breeding of poultry, foxes rubber, wheat or cotton will form groups for round-table discussion The general secretary is Prof F A E Crew, M D, F R S, director of the Institute of Animal Genetics, West Mains Road, *Edinburgh*, 9 The provisional programme includes expeditions before, during and after the *congress*, with an instructive and attractive journey from London to Edinburgh by motor-coach

SALE OF PATENT MEDICINES

Clause 7 of the Finance Bill, under which Sir John Simon seeks to repeal the medicine stamp-duties as from Sept 2, has become a centre of political interest It is reassuring to learn that no less than 197 supporters of the Government have put their names to an amendment which proposes to postpone this repeal until 1944 Removal of the last vestiges of official control of the traffic in proprietary medicines would, it is feared, encourage a return to quackery in its most blatant forms, and there would be little remaining incentive to disclosure of their composition The supporters of the amendment hope that during an interval of five years a better system of control will be devised and the proprietors of packed medicines will see the wisdom of putting their house in order

THE LISTER INSTITUTE

On Friday last Prof William Bulloch presented the annual report of the governing body to the general meeting of the institute The report consists chiefly of a summary of investigations which cover a remarkably wide field, and it may be recalled that the council of the institute represents not only its members but the Royal Society, the Royal Irish Academy, the *Royal Colleges* of Physicians, of Surgeons, and of Veterinary Surgeons, the British Medical Association, and the universities of Oxford, Cambridge, London, Manchester, Edinburgh and Dublin—not forgetting the worshipful (and generous) Company of Grocers Last year it was decided to increase the membership of the council from 30 to 40, and as a beginning Prof Major Greenwood, Prof C R Harington and Dr Paul Fildes were appointed as additional representatives of the members Much of the research which Sir John Ledingham directs is done in coöperation with the Medical Research Council, a section of it with the British Empire Cancer Campaign Only very close reading of the report can bring out properly the many directions in which the growing points of knowledge are advancing A glance at the published accounts reveals the remarkable fact that nearly £35,000 came in from the sale of serums and vaccines and a further £2600 from fees for analysis About another £20,000 derives from interest and dividends, and although much of the work is honorary or financed by grants a sum of almost £29,000 is allocated to salaries and wages of staff It must be gratifying to the governors that there was this year a balance of £7700 to transfer to capital account

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Mrs C B S Elgood, O B E, M B, late senior lady medical officer to the Egyptian Ministry of Education, was created a commander of the Order of the British Empire in the Birthday honours list

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> "In the State Hospital (New York) for mental cases, the authorities purposely do not have a ward service, as they think going to a central library is an additional interest for the patients, but books are brought to those who are too ill to move"—*Book Trolley*, June, 1939, p 164

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[1] Kawakita Y, *Jap J exp Med* April 20 1939 p 211

[2] Maitland H B, and Maitland M C *Lancet* 1928 2 596

SPECIAL ARTICLES

"CLOSED" TREATMENT OF WAR FRACTURES

BY JOSEP TRUETA, M.D Barcelona
LATE CHIEF SURGEON TO THE HOSPITAL DE LA SANTA CRUZ Y DE SAN PABLO, BARCELONA

EVERY great war has led to an advance in surgery; this was especially evident in the Russo-Japanese and Balkan wars and the war of 1914–18. In the treatment of wounds excision and immediate suture has given way to the application of antiseptics, to *débridement* and resection without suture, and to the Carrel-Dakin treatment by irrigation. But the last twenty years have shown that even the Carrel-Dakin method, although superior to many of its predecessors, is often incapable of stopping a virulent infection.

SPANISH WAR EXPERIENCE

At the beginning of the war in Spain most of the surgical methods used were those generally in vogue on the Continent, being influenced especially by the French school In all the surgical centres except mine the use of antiseptics for infected wounds and the frequent examination of clean wounds meant that compound fractures were treated by continuous extension or immobilisation in splints—always with the idea of keeping the wounds in full view. In some surgical centres, where Bohler's methods were rigidly followed, the surgeons went so far as to immobilise the fractured limb with plaster but immediately cut a window to expose the site of fracture. Despite the use of these different methods, all forms of wound infection were seen, ranging from localised osteomyelitis to gas-gangrene Even the resection of injured tissue, the removal of all foreign bodies, the systematic administration of anti-gas-gangrene serum, and the application of various antiseptics to the wound did not remove this danger.

In Catalonia the best results were achieved by those surgeons who set the wounded limbs in plaster, in which they cut a window, taking care not to handle the wound so long as it progressed favourably. Later another system (to be described below) was evolved and when all its possibilities became known it was adopted generally.

ORIGIN OF CLOSED TREATMENT

In 1929 I began to treat wounds in civil practice, especially those due to industrial accidents, by a method combining the technique of L P. Friedrich, in Germany, with that recommended for osteomyelitis by Winnett Orr. My procedure consists in *débridement* and excision of all bruised tissue, the wound is then packed and covered with dry sterile gauze, and finally a plaster case with no window in it is applied to the limb At first I treated only unimportant wounds in this way, but encouraged by the results I used the method in severe compound fractures of the tibia and fibula with a very satisfactory outcome After treating 100 cases thus I communicated my results to the Surgical Society of Barcelona but did not get a good reception Later I published further cases in the Catalan medical press In the seven years before the beginning of the Spanish war, I could not persuade more than a few surgeons to try my method, although independently Dr. Lelio Zeno, of Argentina, who was well known in Barcelona, had published an account of the satisfactory treatment of burns by immobilisation in plaster.

At the outbreak of war, since I was chief surgeon of the largest hospital in the city, I was able to apply this treatment on a large scale, to observe its complications and study its advantages and disadvantages. The treatment was administered to the wounded in the streets or at the front, for at first there was no organised army medical service Later the repeated bombardments of Barcelona enabled me to collect the statistics of patients treated in the way I recommended I published two papers in Catalan journals (Trueta Raspall 1936, 1937) and collected my experience into a textbook (Trueta Raspall 1938) My repeated insistence on the good results obtained and the large numbers of patients treated by this method led later to its general adoption in the army medical service under the direction of Prof J d'Harcourt, who was chief surgical consultant to the republican army.

SELECTION OF CASES

The aim is to preserve the fractured limb as far as possible, unless it endangers the patient's life or is unlikely to be of any use In deciding whether or not to remove a fractured limb, the criterion is the *state of the circulation in it* The temperature of the hand or the foot and the colour of the skin are a good indication whether to operate or not, and sphygmomanometer readings are helpful Continual practice enables one to distinguish accurately the cases that need immediate amputation from those that can be treated conservatively. It is more difficult, however, to distinguish between the limbs that will be useful to the patient and those that will later require amputation In this respect the criterion for the arm differs from that for the leg Broadly speaking, the important point for the arm is the preservation of movement, whereas for the leg it is the maintenance of a strong support. Conservative treatment is far more often desirable for the upper limb than for the lower, because even deformed stumps of fingers, hands contracted by scars, and fingers rendered stiff by adhesions are more useful than the best artificial hand Re-education clinics and spontaneous adaptation by the patients produce wholly unexpected good results as regards utility of the limb Further, conservative treatment is essential to prevent so far as possible the development of a feeling of inferiority and disability, with their social consequences, in patients invalided with war wounds. The smaller danger to life caused by injury of the upper limb allows amputation to be rejected in many cases that at first sight seem to need it

In the leg there need be less hesitation In the first place it is possible to provide a useful artificial limb Secondly, deformed feet often remain painful, and there may be harmful ankylosis, which may need later amputation Thirdly, injuries of the leg are generally more dangerous than those of the arm The decision for or against removal of the limb is hardest with a badly broken femur, and it is such fractures that have proved clearly the advantage of my method. In some cases of extensive wounds from shrapnel, which left enough blood supply to allow of conservative treatment, the operation was begun with the idea of not amputating, but the resection of bruised tissue—an imperative part of the conservative treatment—left the bone so bare that we were finally obliged to do so This change of plan in the course of the operation was undoubtedly bad for the patient, but it shows how far conservatism was pushed in Catalonia in the attempt to save every possible limb With experience this error can be avoided

The obvious objection to this conservative treatment is that it may increase the risk to life—briefly, that gas gangrene and infective osteomyelitis and suppurative arthritis would be more liable to complicate *fractures* treated in this way Our figures show that this is not so Comparison of the cases treated by this conservative method with those treated by the classical method at the beginning of the war shows that the incidence of gas gangrene greatly diminished, despite the fact that at first anti gas gangrene serum was used prophylactically, whereas later in most of the Catalan surgical service it was used only therapeutically Gas gangrene was rare among the casualties treated by my method.

TECHNIQUE

When a casualty had been carried to the casualty ollecting post at the front, or (after an air raid) to hospital in the town, he was classified by surgical xperts who decided the immediate treatment Until irly late in the war the treatment of fractured mbs was considered less urgent than the treatment f abdominal, thoracic, and cranial wounds, but this ecision was changed when it was found that the acture cases were the *ones* on which the surgeon ould operate most successfully, whereas very few atients with abdominal wounds survived and cranial ounds did not require immediate operation

After classification the patient was put to bed or aken immediately to the operating theatre, where the irgeon examined his wounds and gave him a routine jection of 3000 units of tetanus antitoxin, preceded necessary by blood transfusion General anæsthesia was induced with ether given with Ombre anne's apparatus, spinal anæsthesia being reserved or patients with not very serious fractures of the eg, in whom the blood pressure was only little owered *As soon as the* patient was anæsthetised, he wounds were cleaned with soap and water and ail brush After the skin had been shaved it was wabbed lightly with tincture of iodine, care being aken that none touched the wound The field of peration was isolated with towels, and the bruised issues were excised As much skin was saved as possible, only the edges were resected, for loss of nuch skin leaves the muscles, tendons, and apo neuroses very bare and hinders healing Skin was emoved only if its vitality was in danger—e g, when it had been much torn or its blood supply had een destroyed—but treatment of the muscles and poneuroses was much more radical We did *not* preserve any bruised muscle that did not react well when pinched with forceps or which had an abnormal colour or no blood supply

To be conservative with the limb was to be very radical with the tissues, *especially* the muscles A different criterion, however, was adopted *for* the bones Like the skin, the bony fragments were preserved wherever possible—even including those deprived of periosteum if they were big Much loss of bone is likely *to lead* to pseudarthrosis or to troublesome delay in uniting

After the large fragments of bone had been carefully replaced, it was necessary to drain the cavities left by extirpation of the soft tissues This drainage is of great importance, for a badly drained cavity allows of the collection *of* fluid, at first consisting of blood but rapidly changing to pus The best drain proved to be sterile absorbent gauze introduced between the *tissues in the direction of the* muscle-fibres Sometimes we inserted a rubber tube in the lowest part of the cavity In very few patients was the skin sutured

The fracture was reduced by placing the limb in a convenient position according to the bone fractured and the level of the lesion—e g, arm in abduction and anteflexion for fracture of the middle third of the humerus, and leg *in semiflexion for fracture* of the lower third of the femur If necessary an extension table like that of Putti was used a plaster cast was placed round the fracture, including the adjacent upper and lower joints This cast was left in position so long as there was no excessively bad smell and the plaster did not become wet and soft In either of these events it was removed and a second plaster was substituted As a rule this stayed on till the *fracture* united, but in some cases the plaster had to be renewed three, four, or more times, because it could not be kept on more than a fortnight When a plaster was renewed, the opportunity was taken to remove the gauze pack, which sometimes had become *firmly adherent* to the granulations of the wound

For a few days after operation the patient nearly always ran a temperature, which *showed* that a local fight was going on against infection at *the site of* the fracture, but in only 0 75 per cent of cases was it necessary to remove a plaster because of true clinical infection, and on these occasions it was found either that a cavity was badly drained or that *there was a cellulitis* which needed further *débridement followed* by renewal *of the plaster*

ADVANTAGES AND DRAWBACKS

The immediate benefits of the plaster treatment include absence of pain, rapid disappearance *of* shock, elimination of sleepless nights, and return of appetite, and the absolute rest of the fractured limb promotes good normal union The failures were all *attributable* to faulty technique the surgeon had either tried to save a limb with insufficient blood supply or had not excised enough bruised tissues

Among my cases was one of wet gangrene in the leg of a woman seriously wounded by a bomb; I tried to save the limb although it had a deficient blood-supply, and a *few days* later there was ischæmia of the toes with fever On removing the plaster I found a conspicuous line of demarcation above the wound in the middle third of the leg, but gas-gangrene did not develop.

I saw only one case of gas gangrene in 1073 patients treated by me or under my direction, and that was attributable *to faulty* technique

A man of 58 was wounded in both legs by a bomb Because the hospital was inundated with casualties the operation was performed too hurriedly I paid most attention to the right leg, which was much more extensively *injured* than the left After conscientiously excising the mortified *tissues* of the right leg and plastering it half-way up the thigh, I rapidly examined the left leg, which, apart from a fracture of both bones, had only a small wound of the soft tissues I made only a small incision, excised some bruised muscle near the site of fracture, *left* the skin unsutured, and plastered the limb A couple of days later gas gangrene developed in the left leg and was treated with anti-gas gangrene serum and extensive *débridement* which exposed some *mortified* tissue at such a distance from the site of fracture that it had not been discovered at operation The patient died

A common complication was cellulitis. This developed in some cases that appeared to have been correctly treated, and this makes it more difficult to foresee But its treatment is usually easy. If in a case of fracture treated by plastering there is a rise of temperature, with loss of appetite, pain at the site of fracture, and local adenitis, the plaster must be removed, and nearly always a cellulitis will be found, or more rarely a primary lymphangitis. The usual treatment for cellulitis is undertaken—i e., ample *débridement,* exposure of the whole of the affected area, and plugging with sterile absorbent gauze The plaster is renewed either immediately or at most two or three days later. I had to remove the plaster from 8 patients for this reason; I replaced them, and in all but 1 the fracture united satisfactorily. The exception later developed a pseudarthrosis.

The commonest sequel (81 cases), although unimportant as regards mortality, was very troublesome as regards the union of the fracture This was a local osteitis, which regularly followed extensive loss of periosteum or local infection of bony fragments. In these cases the total encasement in plaster is as beneficial as Orr's treatment in chronic osteomyelitis. The illness was long and unpleasant but devoid of danger; sometimes secondary sequestrectomy was needed or partial resection followed by an immobilising plaster, as in Orr's treatment.

Two patients with fractures involving femur and pelvis died: one eighteen hours later from shock and the other seven days later from septicæmia. Two patients died from complications which, although due to the wound, could not be attributed to the treatment—one from pulmonary embolism and the other from bronchopneumonia Two patients had hæmorrhage at the site of fracture necessitating temporary removal of the plaster for purposes of hæmostasis, both made an uninterrupted recovery I saw five cases of pseudarthrosis: one in the middle third of the humerus and four in the tibia. Three of those in the tibia and the one in the humerus did not unite because the amount of bone lost made contact between the fragments impossible. Two of these cases were cured by oblique osteotomy of the fibula, which allowed the fragments of the tibia to be approximated. Another of them was treated by grafting; this patient disappeared before being cured The remaining two patients were sent to another hospital and I know no more about them

The only drawback of this treatment is the bad smell emanating from the plaster after a few days, especially where the wound is already infected. This smell can be reduced by proper ventilation or, better still, by keeping the patients on open balconies; and the oldest plasters, which have collected the most discharge, can be changed.

The advantages are incontestable and include, besides those already enumerated, the facility of evacuation. With a well-organised medical service and with surgical posts close to the front line, fractures can be operated on immediately and plasters forthwith applied, enabling the wounded to be transported at once No apparatus so far invented with the object of facilitating transport—not even the Thomas splint—can compare with the plaster cast, which can be adapted for fracture at any site Continuous extension, especially for oblique fractures of the femur, cannot be carried out near the firing-line, which means that this form of treatment is begun too late; the patient has to be transported a long way so as not to occupy a bed required for those wounded later. Add to this the fact that the results obtained by our treatment are in no way inferior to those obtained by continuous extension, and it will be seen that there is no need for Balkan beams and the other complicated apparatus of suspension and extension.

RESULTS

The exact number of patients treated by the end of the war in Catalonia is unknown to me, because I do not possess the army statistics, but I have been informed in a letter by Prof. d'Harcourt that more than 15,000 casualties were treated by this method with satisfactory results. During the long and severe battle of the Ebro, for example, the republican wounded had an amputation-rate of only 0 73 per cent, which is satisfactorily low considering the high proportion of injuries to limbs caused by aircraft in modern warfare. The more direct evidence I will adduce comes from my own experience in the centres under my control: the Hospital de la Santa Cruz y de San Pablo General de Cataluña, the Hospital de Sangre de Sabadell, the Clinica de Accidentes de la Caja de Previsión y Socorro, and my private clinic. This experience is based on wounds of all kinds, from those due to long-distance missiles, which usually produce fractures without much tissue damage, to fractures accompanied by much destruction due to aerial bombardment.

The time that elapsed between the infliction of the wound and surgical treatment was very variable: from 18 minutes in a case of fracture caused by a bomb in Barcelona to 49 hours in the case of a wounded man evacuated from the Aragon front without having received any attention. Many of the patients reached me with their wounds already infected and too late for aseptic surgery. I also treated during the war many wounds due to industrial and traffic accidents; so my experience includes almost every kind of injury, sustained in the most diverse circumstances.

I have treated 1073 compound fractures of all kinds by total encasement in plaster. Many of the patients had severe infected wounds, and some were in a very bad state There were 6 deaths, but only 2 were attributable to the method used—i e, those due to gangrene One was caused by shock, and another by infection; in those 2 cases my method could not cure the desperate condition The deaths due to embolism and to bronchopneumonia are not

RESULTS OF TREATMENT OF FRACTURES BY TOTAL ENCASEMENT IN PLASTER

Type of fracture	Cases	Good result	Bad result	Deaths
Scapulohumeral . ..	55	55	0	0
Shaft of humerus	142	140	1	1
Elbow-joint	64	60	4	0
Forearm	121	110	11	0
Wrist and hand	106	93	13	0
Intracapsular of femur ..	21	17	2	2
Extracapsular of femur ..	101	88	12	1
Knee-joint	43	40	3	0
Shafts of tibia and fibula ..	225	198	25	2
Tibiotarsal and calcaneo-astragalar	67	60	7	0
Anterior part of foot . ..	128	115	13	0
Total	1073	976	91	6

tributable to the method The accompanying ble summarises the results Among the bad results e included certain cases that may possibly have een cured, as, for example, pseudarthrosis and ronic osteomyelitis, some of the patients left ospital and the results are not ascertainable There re also 4 delayed amputations included in this roup in one case of severe suppurative arthritis of he knee the life of the patient, who came for treatment hen already very ill, was saved by amputation, n 3 other cases, which had been treated conservatively, deformity of the foot had ensued which necessitated mputation The group of bad results further ncludes 7 patients who developed some deformity which greatly reduced the utility of the limb The percentages of final results are as follows —

Good results	90 9
Bad results	8 6
Deaths	0 5

Besides the above mentioned cases 76 urgent amputations were performed on patients brought in with destroyed limbs, which could not possibly be saved These figures exclude 119 patients who were admitted with multiple fractures and serious wounds in the abdomen, the thorax, or the head, from which they died In some of these the fractures were plastered, merely to immobilise the limbs In others this was impossible

SUMMARY

In Catalonia, during the Spanish war, the best results in the treatment of compound fractures were obtained by total encasement in plaster without windows

At operation extensive *débridement* was carried out, all bruised tissues, especially muscles and cellular tissue, being excised, but care was taken to preserve as much skin as possible and all large bony fragments The cavities left by extirpation of tissues were drained with sterile absorbent gauze or sometimes a rubber tube The skin was seldom sutured

The joints above and below the fracture were immobilised in the plaster, which was not removed unless it became wet and soft, or there was an intolerable stench, or the patient's condition showed that some complication had developed

The fear that such treatment of fractures must lead to an increase in sepsis, especially gas gangrene, was found to be groundless, and the method, by facilitating evacuation and dispensing with apparatus, had great advantages under war conditions

In 1073 cases of fracture treated in this way there were 6 deaths, only 2 of which were due to gangrene The results were considered good in 91 per cent of cases

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“ The cat is a dioestrual animal that is, one in which œstrus appears twice a year The first cycle occurs in the spring, the second one in early autumn In this respect, together with the other factors (change of habitation, for example), climate has a great influence It may happen that these two cycles overlap during the summer months, whereas winter is mostly a period of complete rest from sexual activity In the female cat, ovulation occurs about forty to fifty four hours after copulation As in the rabbit or ferret, a female cat served by a vasectomized male shows the phenomenon of pseudo pregnancy which lasts about thirty-six days ”—*Nature, Lond* May 27, 1939, p 900

DENMARK

(FROM AN OCCASIONAL CORRESPONDENT)

THE INDUCTION OF ABORTION

LIKE many another country, Denmark has been involved since the war in a passionate controversy over the indications for inducing abortion The upshot of lay and medical discussions on the subject has been a new pregnancy law (law No 163 of May 18, 1937) whose putting into force has been deferred repeatedly, on the last occasion to Oct 1, 1939 Doctors may then well find their forensic ingenuity tested to the utmost by the first paragraph, according to which pregnancy may be brought to an end when it endangers a woman's life or health What latitude of interpretation do not the last two words—“ or health ”—confer?

Conscious of the financial temptations that may assail a doctor in the reading of this paragraph, the legislators have insisted on abortions being induced only in public hospitals and without a fee At a meeting of the Danish Surgical Society not long ago this special precaution was debated Opening the discussion, a hospital surgeon, Dr Tönnesen, expressed his approval of the elimination of a prospective fee from the calculations of a doctor called on to decide for or against abortion He referred to an impending appeal by doctors in charge of private hospitals to the authorities for special authorisation to induce abortions when necessary Without mincing matters, he said “ While the large surgical and gynæcological hospitals for a long time showed a strict reticence, several doctors without special knowledge or training in gynæcology have taken the matter into their own hands Even though these doctors have insisted on the idealism of their motives, the result at any rate has been a very confused mixture of idealism and business ” Another speaker, however, challenged the justice of the financial safeguard, saying that it was quite wrong “ As doctors, it is our livelihood to receive payment for our work and it is our right—indeed our duty—to accept fees for the induction of abortion undertaken on legal indications ”

THE CAMPAIGN AGAINST BRUCELLOSIS

Infectious abortion in cattle and all its consequences are, according to a recent calculation, more costly to the farmer than tuberculosis, rife though this is in Danish herds But legislative measures are more severe against the latter, partly because we have been tuberculosis conscious for a comparatively long time, the march of public health measures is as slow and stately as that of a London policeman At present the butcher who sells tuberculous meat lays himself open to severe penalties, whereas he may sell milk teeming with *Brucella abortus* without anyone saying him nay For that matter, he may also sell quite a concentrated suspension of tubercle bacilli in milk with impunity

Dr Ejnar Nyrop has lately asked his colleagues if infectious abortion in cattle cannot be stamped out quickly and at a comparatively low cost He answers his own question in the affirmative by pointing to the successes achieved in this field in Norway, and to the encouraging results already obtained in different parts of Denmark In 1936 the farmers and veterinary surgeons of the island of Bornholm set themselves the task of eradicating infectious abortion in cattle, and the state came to their aid to the tune of kr 100,000 yearly By June, 1938, 3705 of the 3811 herds with a total of 37,897 cattle over one year old had been examined, and 2478 had been found healthy, whereas 1227 contained *one or more* infected cattle. With approximately a third of the herds and 14 per cent of all the cattle of Bornholm infected, the prospect of getting rid of the disease quickly and at small cost seems to be slender—the *more* so as throughout Denmark as a whole 2–3 per cent of all the herds show new infections every year. But Dr. Nyrop pins his faith in the future on recent experiences in Norway where in the course of only four or five years the picture has been completely changed. The Norwegian campaign was started in 1935, with the state and the farmers sharing the expenses entailed by the slaughter of infected cattle Among the 200,000 Norwegian herds were 3014 found to be infected between 1935 and 1938. By Feb. 28, 1939, 2860 of these herds had been rid of the infection—i e, 94 9 per cent—a prodigious achievement in record time In the second quarter of 1936 there were 127 newly infected herds notified, whereas in the second quarter of 1938 this figure was reduced to 18.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE ARMY MEDICAL SERVICE

IN his presidential address to the Irish Medical Union, delivered on June 8, Dr. P. MacCarvill stated the reasons why the union had found it necessary to advise medical men to refrain from joining the Irish Army Medical Service until the conditions of pay and pensions should be improved. On June 15 the public press contained a statement from the Department of Defence purporting to be a reply to statements in an address of the president of the union. The arguments put forward by the department depended largely on comparisons between the pay and pensions of (1) medical officers and non-medical officers in the Irish Army, and (2) medical officers in *the Irish Army and in the British and other* armies. It concluded with the proposition that "any suggestion that the medical profession is being unfairly or unreasonably dealt with is altogether unwarranted and not founded on fact."

Dr. T. F. O'Higgins, a member of the Dáil and a member of the executive committee of the Medical Union, replied in the morning papers of June 16 to the contentions of the department. He showed that in the comparison that had been made between medical officers in the Irish Army and those in other armies allowances in kind had been considered in the case of the former but not in the case of the latter Moreover, the department had committed itself to the statement that "the rates of pay of medical officers in the Irish Army were, up to the date of the promulgation of the revised rates for medical officers, generally higher than those paid to medical officers in the English and American armies." Dr. O'Higgins, quoting the figures, shows that this statement is untrue as regards all ranks higher than that of captain He shows also that the rank of captain in the Irish Army is practically stationary, as under the old rates of pay there were only five officers who held higher rank, and from 1924 to 1939 no promotion higher than the rank of captain had been made. *It* is astonishing that a government department should find it proper to attempt to mislead the public on points of fact in order to defend a scheme of pay and pensions which is not capable of genuine defence Dr. O'Higgins points out that under the present scheme a medical officer will on retirement receive as maximum pension approximately one-third of his pay, whereas an officer in other branches of the army will receive approximately two-thirds. He might have added that no medical officer in the army at the time of the promulgation of the recent regulations can by a step of promotion obtain any increase of pay. He will have increased responsibility but not increased remuneration.

INDIAN MEDICAL SERVICE

ANNUAL DINNER

Major-General Melville presided at the annual dinner of the I.M S., held at the Trocadero on June 14, and proposed the toast of The Service. He had, he said, received a telegram of good wishes from the Director-General. He spoke of the dinner as "rather a self-centred thing," while bidding the guests cordial welcome During the year since they met last no catastrophe had occurred; recruiting was in fact most excellent, and the last batches were as good as they ever had been. He counted 111 officers present; they illustrated the enormous variety of careers open to members of that service To the new recruits he offered a word from his own experience. A man, he said, became an administrator when he had one other officer under him. Maladministration makes this officer a discontent; a slight makes him an assassin. He reluctantly bade goodbye to Sir Thomas Carey Evans as dinner secretary. Invited to respond, Sir Thomas remarked he was a good listener and hoped everyone had enjoyed their dinner, the menu of which was Sir Richard Needham's choice The Chairman's health was proposed by Colonel Proctor, who said that Melville gave his juniors the impression that he regarded them as highly competent, and they had to live up to it.

Guests at the dinner were Sir Frank Brown, C I.E, Dr. Hugh Clegg, Sir Wilson Jameson, Mr. D. M Cleary, Dr. Egbert Morland and Prof James Young Officers present were as follows:—

Major-Generals: Sir Frank Connor, D S.O., A. W. M. Harvey, Sir John Megaw, K.C.I.E., C W. F. Melville, C.B., H. R Nutt, Sir Leonard Rogers, K.C.S.I., C.I.E, F.R.S., G Tate, C I.E

Colonels· H. Ainsworth, Sir Rickard Christophers, C I.E, O B.E, F R S, H. M Cruddas, C.M.G., O B E., H. R. Dutton, C.I E, A. B. Fry, C.B, C.S.I., D.S.O., J. Fuller-Good, C. A Gill, T. A Granger, C.M.G, C. R. M. Green, W H. Leonard, C.B., H. M. Mackenzie, C.I E, F. P. Mackie, C S.I., O.B.E, A. J. Macnab, C.B., C M.G., Sir Richard Needham, C I E, D.S.O., A H. Proctor, D.S O, C. H. Rheinhold, M.C, H. A Stranger-Leathes, Ashton Street, F. F. Strother Smith, R G. Turner, C M G., D S.O., W. L. Watson, O B E., C. N. C. Wimberley, C.M.G.

Lieut.-Colonels: W. G P Alpin, O.B.E., F J. Anderson, C I.E, M C., R S Aspinal, C H. Barber, D S.O., F. A Barker, C.I.E., O B.E, A. N. Bose, O B.E., G. T. Burke, C I E, H. P. Cook, H. F. Cormac, M C, D. G. Crawford, J. M. Crawford, O.B.E., J. B Dalzell-Hunter, O.B.E., I. Davenport-Jones. S. C. Evans, J. K. S. Fleming, C.B E, B. Gale, E. S. Goss, M C., P. Fleming Gow, D S O, V. B. Green-Armytage, F. Griffith, A. E. Grisewood, W. L. Harnett, C I.E, S. N. Hayes, H. Hingston, E. A. V. Hodge, C I E., J. M. Holmes, E. V. Hugo, C.M G., M. L. C Irvine, R. Kennedy, D.S O., H H. King, C.I.E, E. W. O'G. Kirwan, C I.E, A. C. Macrae, C. McIver, G. E Malcomson, W. A. Mearns, C. Newcombe, C.I.E, D V. O'Malley, O.B.E., J. B Lapsley, M C, J. C. H. Leicester, C.I E., A. V. Lopes, G. Lynn Rigby, D S O, M C Newton-Davis, H K Rowntree, M C, H Ross, C I E, O B E, R B Sewell Seymour, C I E, F R S, H E Short, H A S Short, J A Sinton, V C, O B E, H B Steen, R Steen, W D H Stevenson, C I E, H Stott, C I E, C Thomson, E Owen Thurston, A G Tressider, C I E, E L Ward, C B E

Majors J A Cruickshank, M C, H C Brown, C I E, Sir T Carey Evans, M C, V E Lee, V B Nesfield, C G Seymour, M R Sinclair, O B E

Captains Dev Datt, R L Raymond, Man Singh

Lieutenants G T Hayes, D H Harrison, P W Kent, W M McCutcheon, G S Michelson, S G Nardell

Appended to the menu was a list of dinner chairmen from 1897 to 1938 compiled with much industry by the retiring hon secretary

MEDICINE AND THE LAW

Inquest Verdicts and Civil Liabilities

THE St Pancras coroner, Mr W Bentley Purchase, last week rejected a jury's finding of negligence against a railway company The inquest concerned the death of an employee who, while acting as fireman, had fallen from the foot plate of a stationary engine To its verdict of accidental death the jury added its opinion that the accident would not have occurred but for the company's negligence The coroner refused to accept this rider Nobody had suggested any negligence, there was, he thought, no evidence to support such a suggestion "Any opinion you express," he remarked to the jury, "is no part of your verdict and was not asked for."

This rebuke, perhaps incompletely reported, may seem puzzling inasmuch as juries are, after all, summoned to express opinions An inquest tends to be a roving inquiry and a coroner occasionally accepts with tolerance a rider with which he happens to concur But Mr Bentley Purchase was at any rate acting in accordance with the views of the departmental committee on coroners over which Lord Wright presided The committee's report, published in 1936, referred to the growth of a practice whereby interested parties made use of inquests in order to elicit facts which had a bearing on civil liabilities but which were not strictly relevant to the issue before the coroner This practice, in the words of the report, was properly condemned and checked by some coroners A Home Office witness had told the committee of a case where the coroner had actually given directions to the jury on the question whether the accident occurred "in the course of the workman's employment"—a nice point of workmen's compensation law which, if a dispute arose between employer and workman, ought to be left to the county-court judge to decide in the light of decisions of the Court of Appeal and House of Lords The Coroners Act requires the coroner to investigate the question "how, when and where the deceased came by his death" In cases of murder and manslaughter the coroner and his jury are authorised to impute blame to individuals, if the evidence justifies such a course, by implication in all other cases the scope of the inquiry is confined to an ascertainment of the facts The Wright committee went so far as to recommend that it should be declared by act of Parliament that coroners' courts are not to concern themselves with questions of civil liability No effort has hitherto been made to give statutory effect to any of the committee's recommendations Meanwhile each coroner can (and, in the committee's opinion, should) so exercise his discretionary jurisdiction that his court leaves any prospective claim for damages to the tribunal before which it will properly come

Electronic Reactions and Diphtheria

Too rigidly exclusive a contraction of the coroner's jurisdiction would have prevented the interesting experiment which has been conducted in the course of a protracted inquest at Leigh A boy died of syncope due to diphtheria His mother said that, in the absence of her own doctor, she had called in Mr C C Abbott, who is described as a physio medical practitioner She and her husband and other members of her family had been patients of Mr Abbott Dr Arnold Renshaw, pathologist, of Manchester, gave evidence that adequate treatment of the boy's disease in the early stages by antitoxin would have saved his life, the throat was one of the worst he had ever seen Mr Abbott, who had stated in a letter that death was due to septic throat infection, septicæmia and heart failure, described at the inquest the treatment he had given There were signs at one time, he said, of diphtheria, but he had tested a swab from the boy's throat by the electronic method (sometimes spoken of as the "black box") and the reactions did not indicate a definite diphtheritic state He came to the conclusion that there was no diphtheria He ordered the child's throat to be painted, but the child refused to allow it Mr Abbott said that, when he saw the throat later, he thought there were signs of diphtheria He did not believe in the antitoxin treatment He had 30 years' experience and had never failed in any case of this kind before Explaining the electronic method, he said it was the application of a type of resistance with a series of traps allowing particular wave length resistances to pass through The wave length of diphtheria was 5,100,000 vibrations per second

Dr Renshaw, recalled after Mr Abbott's evidence, said that Mr Abbott's diagnosis was misleading and the right tests were not made The witness agreed with Dr R S Davidson, medical superintendent of Astley Sanatorium, that there was only one specific treatment for diphtheria—namely, the use of antitoxin in the early stages It had been established that this treatment cured the majority of patients suffering from the disease Dr Renshaw offered to test Mr Abbott's electronic box with cultures which he would himself supply Mr Abbott accepted the offer, and, after taking time to consider his decision, the coroner approved A prolonged test was conducted on June 16 Mr Abbott was supplied with tubes containing the bacteria of five diseases, with one blank tube, each tube being marked with a letter to which the coroner held the key in a sealed envelope At the resumed inquest on June 20 it was announced that Mr Abbott had returned a correct diagnosis for 3½ out of 26 tubes Mr Abbott complained that he had been interfered with too much during the test, and that the coroner had conducted it in his own way rather than in Mr Abbott's The inquest was again adjourned

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"If I were sending my ewe lamb to school for the first time I should want to be satisfied that the child would be given the essential foundation of self-discipline, and would acquire good manners, cleanliness, and punctuality I would not bother about academic training—nobody bothered about mine But I should bother rather a lot about health, not merely because I am a doctor I should bother about food, and more and more about rest—rest above all things—both for the body and for the mind "—Lord HORDER, speaking at Parents' Day at Bedales School, Petersfield

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM PETER QUINCE

IV

"What action would you take if a ship came into port with a case of bubonic plague on board?" Ninety-nine per cent. of medical practitioners would answer, "Look it up in a book or ring somebody up about it," but that, I fear, would score *no marks* at all in the Conjoint medicine final where I met the question. It has always infuriated me to think that, had I not ploughed on the other questions, this particular one might have brought me down, in fact, that my inability to answer it may have contributed to my downfall. How does such a question come to be set? Well, I am not absolutely certain, but I rather think that the examiners, after failing to settle the choice of questions by blows, sit down at a long table and take it in turns to set one The unspeakable Ming-Shu fires off with something depraved about the relations of the ulnar nerve, honest physicians slip in straight questions about their pet diseases, others about treatment and so on until it comes round to Harpo, who has covered his paper with drawings of rats and folded it up into a little ship. This he pokes into the decanter and holds his nose. "A pleasure cruise?" hazards Jimmy Nervo; but Harpo shivers and claps his hands to his groins Groucho guesses it right and awards himself another cigar amid motor-horn acclamations Everybody shakes hands and the question is set (Unless I am mistaken there is a picture of them doing it in this year's Academy.)

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What avails it now that we once knew which was xylem, which phloem and which cambium? Who were Cardo and Stapes? And what happens to tryptophane? To these and to a legion of similar titbits of knowledge we had to achieve insecure adhesion before we could qualify as medical practitioners Most of them came unstuck as soon as the relevant examination was passed, and we are left wondering what exactly we acquired between leaving school and signing our first death-certificate, and why it took six years

I suppose that at the outset of our medical training there is no knowing that we may not after all develop into herbalists, entomologists, or even into Demonstrators in Physiology, so our teachers are impelled in all fairness to tempt us with all their different wares, much as one experiments to see what a tortoise will eat (Incidentally, my tortoise will eat dandelions only if you pluck them and hold them under his nose. I'm sure there is a moral in that.) But by the time we have passed the second M B (and perhaps failed the primary F R.C S) some of us have a good idea of what we intend to be, and yet we are all forced to devote our time and energies in a diffuse and digressive curriculum right up to the final examination Specialists in all the special departments claim the paramount importance of their subjects, spin them out into a three months' course, and see that we dare not escape by contributing a Question to the written papers

Why did those responsible for the curriculum stop when they did? I wonder how academic bodies like the universities came to overlook the History of Medicine? Given unlimited time, I should have enjoyed learning the views of Karshish, Galen and Trousseau on epilepsy, why it is no longer necessary to gather borage under a full moon, and by what stages the witch's brew of Macbeth's time has evolved into today's elegant polyglandular preparation. A little Comparative Medicine would have broadened our mind even further Who of us can compare and contrast the treatment of pruritus ani in (*a*) homœopathic medicine, (*b*) osteopathic medicine, (*c*) Christian Science circles and (*d*) nudist colonies?

* * *

That the curriculum urgently needs renovating is obvious Every year brings some important advance in methods of diagnosis and treatment, but for many reasons medical training must be limited to six years, and the inclusion of fresh subjects must necessitate a careful pruning of dead wood. A gaggle of specialists will never be able to agree as to what can safely be scrapped and what innovations must be admitted: why not therefore invite a hive (or pride) of general practitioners to express their views on what knowledge and experience is necessary for general practice? It would mean that hospitals made it their primary object to turn out first-class general practitioners Those who wished to specialise in any direction could haunt their chosen department unofficially in their spare time before qualification, and with all their energies afterwards

I may as well pile Pelion on Ossa and set the ball rolling with a few outrageous suggestions The *Anatomy and Physiology* course should be condensed into a year; with less dissection into regions which will never concern the practitioner hereafter, and more surface anatomy which is to be his daily battlefield. Surface Anatomy to be taught on bodies fat and thin, in all positions, at rest and in movement by inspection, palpation and X-ray screen demonstrations *Physiology* to continue as a clinical science and to take its place in medicine as anatomy does in surgery. *Midwifery and Gynæcology* to remain in statu quo In *Wards and Outpatients* no more long winded notes to be read aloud Clerks and dressers to be trained to demonstrate their cases from memory or at most by reference to abbreviated notes on a postcard, which remain his private property. *Laboratory investigations* to be used *only for confirmation* of diagnosis or to establish a diagnosis when definite differential diagnoses stand. ("Remember, gentlemen, ninety per cent of your patients won't be able to afford private pathological reports, and the car-fare and the time off work required to visit the local hospital for pathological investigations must be justifiable") *Surgery*: neck-craning at operations three afternoons a week to be discouraged as a waste of time. Finally (to grind an axe) students should be trained to investigate for pulmonary tuberculosis before the patient has been in their hands four months (which appears to be the *average* time taken to arrive at that diagnosis).

As the preclinical training has been shortened by at least a year, we have that much time in hand and must be careful to spend it wisely I would suggest that it be devoted entirely to the study of patients For every hour I spent in personal contact with patients I spent three or four hours at lectures, on ward rounds, or in the theatre or post mortem room listening to talk or watching others doing things Apart from one month as extern midwifery clerk there was no opportunity for gaining any experience of the doctor to patient relationship, or for developing a technique in approaching patients

There might be a system by which students in their last year could be apprenticed in small groups to the different casualty officers or junior house-physicians, very much as the extern midwifery clerks are apprenticed to the extern midwifery houseman The student would be responsible for his cases, when in doubt would engage the houseman in consultation, would follow their progress through the various departments for special examination and would not lose sight of them if they were admitted into the wards Above all he would make real contact with ordinary people who were ill in body or mind, and would perhaps sense that Enigma Theme which, though never heard, breathes through every variation of man's unhappiness

* * *

Couldn't those who are obviously destined to join the honorary staff receive some instruction in the craft of teaching? At our teaching hospitals we have some of the finest medical men in the world, gifted with knowledge, intuition and humanity Some are superb teachers, others are rotten A surgeon's technique in regional surgery may be the envy and admiration of Europe, a physician's researches in biochemical disorders may revolutionise the world's thought, but, unless they can teach, a teaching hospital ought not to puff itself up at having them on its staff Wretched students will waste three or six months' clerking or dressing on their firms gaining unique experience in rare diseases, but learning little about the commoner complaints in which these specialists are obviously uninterested—and perhaps unversed

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Let us also have special courses for Consultants where Manners shall be taught (a) for hospital use and (b) for use at private consultations

Hospital staffs seem to reason thus "If we don't pay our housemen anything, feed them poorly in a basement, provide no facilities for recreation and then make them pay for their laundry, we shall only get the Very Keen Men applying, and that will be grand" They won't—except at the big teaching hospital where a resident will put up with almost any inconvenience for the cachet that such an appointment carries Provincial hospital staffs do not realise that any candidate who is not completely down and out makes various inquiries about the hospital when he comes up on a short list—if not before The questions he puts to the residents include, "Is there a garage for my car? What's the food like? Any free beer in the Mess? Do you get many inquests? Do the honoraries snaffle the fees? What are the honoraries like? Gents or Hobos? Do they snoop round the wards on Sunday morning? Do they get first crack at accident-claim forms? Do they take you out assisting at private operations? Do they give you any major stuff to do? Am I likely to learn anything? Do I ever get any weekends off?"

I won't guarantee the order but it is certain that the hospital staff that earns an unsavoury reputation concerning these issues gets the housemen it deserves, which may be tough on the patients I remember a friend of mine from the Dominions, who held both the M D and M R C P, applied for the post of house physician at a Provincial Hospital, was short listed, interviewed and finally recalled before the staff to be congratulated upon his appointment but meanwhile he had learned that the H P's duties included the giving of anæsthetics for all emergencies and on those occasions—i e, weekends—when the visiting anæsthetists couldn't conveniently come In a brief but telling classical phrase he declined the honour It was all very Christmas Day in the Workhouse

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The Embryonic Consultant should have it drummed into him that there are only three reasons why he is ever called into private consultation (a) the patient or his relatives have asked for a second (but not necessarily a different) opinion, (b) the practitioner wants his opinion, or (c) the practitioner wants his support In any case the practitioner will be glad of his support so far as he can conscientiously give it

The Perfect Consultant learns in advance all he can about the case, and in particular what has already been told to the patient and the relatives Mindful that when he himself is ill he prefers the attentions of a general practitioner to those of another "specialist," he regards general practitioners as his colleagues, and this attitude shows itself at the patient's bedside He listens to the patient's history, examines him carefully, and lets off no fireworks—yet Then he discusses the case with his colleague in another room They may disagree, in which case he listens to his colleague's views and patiently argues his case If necessary both return to the bedside and re examine the patient together and retire once more. Before this consultation is ended some agreement is reached and it is decided what line is to be taken The general practitioner, knowing the mental make up of the patient and relatives, can advise as to the best way in which the situation can be approached Finally the consultant leaves the patient tacitly reassured that he is in the hands of a highly trusted colleague

All the foregoing may appear commonplace, but just watch the Consultant Who Has Never Learned Better in action! He refuses any priming by me and prefers "to approach the case with an open mind." Actually he approaches it with a jocular sort of well—what sort of a mess have I got to-get you-out of? attitude. I stand by in dumb misery while he extracts with leading questions a totally misleading history of the case Occasionally he tosses me a rude question like "You haven't done a fractional test-meal, I suppose?" and I mumble "Er—no," instead of answering "How the hell do you expect a G P. to do a fractional test meal?" because it would be rude and disloyal And besides, I haven't the guts

As soon as the dining room closes on us he weighs in with, "Well, my dear boy, this is obviously a case of such and such What interests me is the absence of the usual physical signs It would be interesting to do a fractional test meal on her She'd better come into a nursing home and then we can do that and a complete barium series and X ray her chest Which would they prefer? Nursing home?—or I dare say I can get her a bed in the private wards at the hospital We'll see Well, let's get back to them"

Well, he may be right or he may be wrong, but by now the situation is entirely out of hand, and I have quite made up my mind that I don't like the man (I very much wish I could whip out an X ray photograph or a pathological report which would confound his cocksurety, but I also know I held any such trump cards, I should lead them prematurely, and he them.) So I shrink back with him to the bedside, looking as guilty as if a carpenter had exposed me driving screws in with a chisel

Alternatively he may even waive the formality of withdrawing for consultation and fire off his hasty conclusions while drying his hands . .

I sometimes wonder how these Consultants Who Have Never Learned Better manage to make a living if they are called in once but never again. I see that this problem engaged my attention even as a student, for I find entered in my commonplace book in December, 1922. "The lady with the wooden leg outside St Martin's Theatre tells me she makes £15 per week letting camp-stools to the theatre queues, but that Queue Entertainers make even better money, and that during the earlier hours of the day one wouldn't recognise them as the same battered outcasts At a favourable opportunity I am resolved to approach —— (one of the worst-mannered honoraries at my hospital) from behind, hiss in his ear '*What do you do in the evenings?*'—and see if he pales"

Actually, of course, I didn't dare.

Next month A Woman Public Health Officer will be responsible for these columns.

LETTERS TO THE EDITOR

CHEMOTHERAPY AND THE WHITE CELLS

SIR,—One or two cases of agranulocytosis in patients under treatment with M. & B. 693 have been reported The occurrence of lesser degrees of granulopenia has received scant notice in the medical press, yet in a comparatively small experience of the drug I have had to deal with it on several occasions, sometimes after relatively small doses. In every case pentose nucleotide has effectively cleared up the condition, and if treatment is instituted early and the case is carefully controlled mild granulopenia seems not necessarily to be a contra-indication to the continuance of the M. & B 693, should this appear desirable on other grounds In the early stages at any rate the changed blood-count is not accompanied by any specific toxic manifestations, so that I now do routine leucocyte-counts on all cases under treatment with M. & B. 693, their frequency depending on whether relative sensitivity to the drug is found in the first few counts May I quote one or two illustrative cases?

1. *Lobar pneumonia due to pneumococcus type* II.—After 6 grammes of M. & B. 693 the white count was 10,200 (polymorphs 94 per cent.). Two days later, after 16 g., the white count was 4800 (polymorphs 40 per cent.). M. & B. 693 was discontinued and 10 c.cm. of Pentide was injected intramuscularly. Next day the white cells had risen to 6800 (polymorphs 50 per cent.). A further 10 c.cm. was given and on the following day the white cells numbered 10,200, of which 62 per cent. were polymorphs.

2. *Severe bronchopneumonia*, with mixed flora, though pneumococci predominant, in the sputum —After 12 g. of M. & B 693 the leucocytes were 10,400 (polymorphs 78 per cent.), and after 22 g the figures were 17,000 and 74 respectively. A total of 25 g. was given. Five days later, as the patient's condition had markedly worsened since the cessation of the M. & B. 693, the drug was again given After a further 10 g. the white cells had fallen to 8600, of which 92 per cent. were polymorphs In view of the relatively low total count the M. & B. 693 was discontinued, but nevertheless six days later the white-cell count was 1100 (polymorphs 27 per cent.); the red cells were 2,840,000 and the hæmoglobin 60 per cent. Pentide (30 c.cm) and Hepatex (6 c.cm.) were given, and the next day the count was: white cells 3800 (polymorphs 34 per cent.), red cells 3,680,000, hæmoglobin 76 per cent. A further 20 c cm. of pentide and 6 c.cm. of hepatex was given on each of the next two days, after which the count rose to 15,800 white cells (polymorphs 65 per cent.), 3,760,000 red cells, and hæmoglobin 72 per cent.

3 *Bronchopneumonia, empyema and septicæmia* with a gram-negative bacillus, possibly an abnormal hæmophilus, in the blood.—*Unfortunately no initial* count was done, but after 7 g. M. & B 693 the white cells numbered 5800 (polymorphs 68 per cent.) The drug was discontinued and 20 c cm. pentide was given. Thirty-six hours later, however, the white cells were down to 2900 (polymorphs 37 per cent.). Further doses of pentide (20 c cm. and 10 c.cm.) were given on successive days, and twelve hours after the latter dose the leucocyte count had risen to 27,200 and the polymorphs to 68 per cent. Five days later, as the patient was dangerously ill, it was decided to try M. & B. 693 again, giving pentide as a prophylactic against granulopenia. Accordingly 1 g. four-hourly was administered, with 10 c cm. pentide on the first day. The initial white-cell count was 22,800 (polymorphs 93 per cent.) The following day counts of 16,400 (88 per cent.) and 19,400 (81 per cent.) were obtained in morning and evening respectively A day later the white cells were down to 12,400, of which 80 per cent. were polymorphs; so a further 10 c cm. of pentide was given, resulting in a count twelve hours later of 28,200 white cells (polymorphs 89 per cent.). After another two days, when 30 g. of M. & B. 693 had been given in this second course, the white cells numbered 28,400 (polymorphs 89 per cent). The drug was having no further effect on the disease and was discontinued. The high leucocyte-count was maintained until death a week later.

I should like to thank Colonel C. M Finny, officer commanding the Queen Alexandra Military Hospital, Millbank, for permission to publish these cases

I am, Sir, yours faithfully,

London, N.W 1, June 17 J. W CROFTON.

THE PROBLEM OF MEDICAL LITERATURE

SIR,—Professor McDowall, in his frank and devastating criticism of the present state of production and distribution of medical literature, must have voiced the feelings, not only of many medical men, but also of a number of "medical" librarians in this country and elsewhere As a member of the latter class, I hope it will not seem an impertinence if, whilst stating general agreement with all that Prof McDowall says, I venture to make one or two comments from the librarian's point of view.

The whole root of the matter is, of course, that (as he puts it) the general problem is nobody's business. Most research workers are concerned mainly in getting their references as speedily as possible and are not interested in the technical problems involved in filing and making their own work most readily available, whereas the librarian, who appreciates these difficulties and wants to overcome them, is hampered to some extent by the lack of realisation on the part of many medical men of the enormous difference a properly organised library service can make, and indeed what a fundamental part it has to play in the advance of medicine In plain words, it is, as Prof. McDowall says, more coordination that is required, not only between the various libraries, but also between research workers and librarians

The problem is now a mountainous one and, as I see it, nothing will suffice short of a conference, or a committee, representing both medicine and librarianship, to go into the whole matter in detail Such a committee would have the task of reviewing possible means of coöperation between the various libraries, large and small, as well as that of considering what steps might be taken to regulate the publishing of specialised journals, and organising a really comprehensive system for reviewing medical literature, such as British Chemical and Physiological Abstracts does in its field, and, in a smaller way, International Abstracts of Surgery for the surgical side of medical science.

As to the coördinating of medical libraries, the whole problem is aggravated by the unwillingness to lend on the part of so many of them Nevertheless, a first practical step would seem to be the collection and collation of the complete lists of periodicals (and the larger handbooks, encyclopædias, &c) taken by the numerous medical libraries in London A beginning was made 15 years ago by Prof R T Leiper with the help of the science committee of the British Medical Association The unified list, circulated to all libraries and institutions, would indicate the two or three places where they could most conveniently obtain what they were seeking Under the guidance of a coördinating committee, it would certainly be possible to develop a system of small highly specialised collections housed in the institutions or hospitals where they would be most in demand, and yet available for distribution to other more general medical libraries Each of these specialised libraries could also supply abstracts and reviews appearing in the various specialised journals and these could be made more readily available still by incorporation in a comprehensive publication (called, say, "Medical Abstract" or "Review of Medicine") Such a general medical abstract would need to be well organised, but could be tackled by some responsible body such as the B M A After all, its sister association across the water presents the medical profession with what is undoubtedly the most valuable bibliographical tool it has, why could not our organisation make an equally valuable contribution without unnecessary overlapping? If the B M A could not undertake the task, the Medical Research Council, under an extended grant, could do so efficiently

But the whole problem needs thorough discussion before anything really practicable can be put into operation—as it undoubtedly must be in the near future, if confusion is not to be worse confounded

I am, Sir, yours faithfully,

G A LLOYD,

Librarian, British Postgraduate Medical School

Ducane Road, W 12, June 17

THE ORIGIN OF FIBROIDS

SIR,—In their instructive paper in your issue of June 10 Prof Lipschütz and Dr Vargas show that the fibroids they have produced experimentally with follicular hormone differ fundamentally from true neoplasms they do not possess the property of autonomous growth, they require the presence of the growth-exciting œstrogen not only for their appearance but for their continued existence, and they regress when the application of this hormone is reduced This helps to explain why fibroids in women differ from neoplasms in their response to X radiation.

It has been repeatedly shown that with small doses of so called superficial X radiation, as distinct from radium or massive deep X-radiation—doses so small that they do not cause the slightest discomfort or reaction in the patient—fibroids and the symptoms due to them gradually disappear I have never had a case which failed to respond in this way The work of Prof Lipschütz and Dr Vargas supports the idea that irradiation acts by checking the formation or absorption of the hormones that cause growth and continuance of the fibroids Whether this is or is not the whole explanation, the method certainly deserves more extensive use

I am, Sir, yours faithfully,

Birmingham, June 17 JAMES F BRAILSFORD.

SEX-INCIDENCE OF CANCER OF THE STOMACH

SIR,—Sir Arthur Hurst suggests that I have misunderstood the statistics he quotes relating to cancer of the stomach The statistics, I think, are clear and unequivocal. What I cannot understand is the rationale of his allowance for the female deaths from cancer of the breast and uterus If Sir Arthur's theory of extrinsic and intrinsic factors is correct it might possibly explain why the female gastric cancer death rate is lower than the male rate, but even should the theory be fully proved there can be no help gained by comparing percentages taken on a dissimilar basis.

I am, Sir, yours faithfully,

Derby, June 15 BARON RUSSELL.

THE UNREGISTERED SPECIALIST

SIR,—May I take this opportunity of drawing the attention of the profession to what might be considered as an abuse of the privileges extended to those refugees of professional standing who are now amongst us I refer to those refugee "specialists" who are not permitted to practise here on account of failing to possess the necessary qualifications for registration Abroad, these men have been well established at various clinics or spas, their clientele consisting of wealthy visitors from those countries where the élite are specially impressed by elaborate treatment and cures which are peculiar to the locality and the nationality of the physician concerned, Through the medium of refugee associations, these gentlemen are permitted to take up residence in fashionable quarters in this country, where they re establish contact with the wealthy clientele which attended them abroad The difficulties arising from lack of registration are surmounted by the foreign specialist's adopting the rôle of consultant, and advising his patients to communicate with their private doctors, who are requested to prescribe according to his dictates In those instances where the services of a registered practitioner cannot be secured by the patients, the consultant is able to suggest a doctor with whom he can collaborate It is curious to observe that here the foreign consultant refers his patient to a physician or surgeon, to whom the matter may cause considerable concern In refusing to associate with such a practice the registered practitioner loses his wealthy patients, and is left to attend hospital outpatients, whilst the foreign specialist is consulting privately throughout the day As I have had experience of these methods on more than one occasion I have considered it necessary to place the matter before the secretary to the ethical committee of the British Medical Association

I am, Sir, yours faithfully,

E SUTHERLAND RAWLINGS

New Cavendish Street W, June 20

UNORTHODOX ETYMOLOGY

SIR,—I was a little puzzled to read in Prof. E. Mira's article in your last issue (p. 1395) that "fear makes a person terrified—i.e., converted into *terra* (earth). A terrified subject feels himself as inanimate and motionless as a stone (petrified)." Does Dr. Mira regard the derivation of "terrified" as analogous to that of "petrified"? He might with equal justice claim support from Genesis, 19, 26, where it is related that Lot's wife was turned into a pillar of salt—although in her case curiosity got the better of fear. The orthodox etymologist would derive "terrify" from *terreo*, which, together with Τρέω, "tremble," Irish *tarrach*, and Slavonic *tresa*, is akin to the Sanskrit *tras* (tremble). *Terra* seems to be derived from the same root as the Sanskrit *tarsh* (dry) and is akin to *torridus*, "thirst," and German *Durst*, meaning dry land Someone might attempt t connect the two words, "terrify" and *terra*, throug the medium of "earthquake"; he would be followin in the footsteps of the cricket fan of some thirty-fiv years ago who invented the equation: terracotta terror Cotter

I am, Sir, yours faithfully,

"DR PANGLOSS."

June 17

PUBLIC HEALTH

Prompt Control

AN outbreak of diphtheria in the urban district of Wilmslow led to the prompt isolation of fifteen persons in the Monsall Hospital, Manchester. We are informed by Dr. D. G. Anderson, medical officer of health for Cheadle and Wilmslow, that the first notifications reached him on June 9 about 5 P.M.; all practitioners in Wilmslow and Alderley Edge were rung up and by 10 P.M eleven cases of diphtheria had been traced. As all these persons, except two in one household, had partaken of milk from a particular supply, this supply was at once stopped by written notice. On the morning of June 10 a house-to-house canvass was made of the customers of the affected dairy, with an inquiry for any history of sore throats in the household and the name of the family doctor. A meeting of local practitioners was then called, when each of them received a list of the customers who were his patients It was then agreed that each practitioner should visit his own patients and offer passive immunisation if he thought fit, and that throat swabs should be taken from both adults and children. This was done during June 10–11, and at the same time contacts were followed up. The last definite case was notified during the night of June 11–12; two other persons have since been removed for observation It has now been ascertained that the one infected household stated not to have had milk from the suspected source had in fact obtained a small bottle of milk from this source which was consumed only by the two children who contracted diphtheria Up to date there have been 15 confirmed cases (with 2 deaths) and 2 observation cases

Militiamen with Infections

Public-health authorities are being asked to collaborate with the civilian medical boards in the examination of men called up under the Military Training Act Where a recruit's present condition or history suggests that he may be suffering from pulmonary tuberculosis, the chairman of the board has authority to obtain a specialist opinion. Local authorities are asked to place their tuberculosis officers at the service of the board and to furnish a report on any of their patients or ex-patients. Where a recruit is receiving treatment at a V.D centre the Ministry of Health has indicated to the local authority the desirability that his treatment should not be interrupted. The suggestion in this case is that the patient should be supplied at the treatment centre with form V.15 setting out particulars, and instructed to present it when undergoing examination at the medical board. It is generally believed that such patients would be prepared to ask for this form and to pass it on as desired The follow-up system offers a possible check, as absence from treatment would be noted and could be inquired into, but the secrecy regulations make it desirable to get the patient himself to be the bearer of the information Evidently in both cases the possible danger to comrades has been a matter of close consideration. Probably a large majority of the new recruits are unconnected with youth organisations, and it is the policy of th British Social Hygiene Council to see that the nee for sex guidance is supplied.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 10, 1939

Notifications.—The following cases of infectious disease were notified during the week. Smallpox, 0; scarlet fever, 1321, diphtheria, 755; enteric fever, 34 (29 "expected"); pneumonia (primary or influenzal), 743; puerperal pyrexia, 209; cerebrospinal fever, 30; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 24; ophthalmia neonatorum, 115. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 16 was 2891, which included . Scarlet fever, 656, diphtheria, 614 (carriers, 23), measles, 7, whooping-cough, 878, puerperal fever, 16 mothers (plus babies), encephalitis lethargica, 304, poliomyelitis, 3 A St Margaret's Hospital there were 25 babies (plus 9 mother with ophthalmia neonatorum.

Deaths—In 126 great towns, including London there was no death from smallpox, 1 (0) from enter fever, 3 (1) from measles, 2 (1) from scarlet fev 16 (0) from whooping-cough, 17 (2) from diphther 39 (14) from diarrhœa and enteritis under two yea and 17 (1) from influenza. The figures in parentheses are those for London itself.

Ilford reported the only death from typhoid Liverpool had 5 deaths from whooping-cough Fatal cases of diphtheria were scattered over 15 great towns, Birmingham reporting 2 Birmingham had 8 fatal cases of diarrhœa, no other great town more than 2

The number of stillbirths notified during the week was 243 (corresponding to a rate of 33 per 1000 total births), including 42 in London.

"I do not wish to underestimate the value of the re-housing work that has been done, but few who have seriously thought about the problem in a personal, human way could possibly feel complacent as to the results so far achieved If we are content to consider the business of home-building in the terms of an old-fashioned textbook of hygiene, oblivious of the fact that men, women and children have needs other than cleanliness, neatness and orderliness, then the average Council flat, like the modern prison-cell and the modern infirmary ward, represents tremendous advance on the average industrial worker' house as it existed in the time of Queen Victoria. But th hygienic man, woman, or child is as imaginary as is th economic man or the unicorn."—Dr. HARRY ROBER in the *New Statesman*, June 3, 1939.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

BY MEDICUS, M P

THE House of Commons has finished with the Civil Defence Bill, which passed its report stage and third reading after three days of debate The bill has now gone up to "another place" with a tail of undefined amendments still clinging about it It must be a long time since such a detailed and complex measure has gone through the House, and the difficulty and the complexity have been increased by the subject of civil defence being so new as to need not only good drafting but good prospecting and exploring As one member said, the bill which has passed is a foundation for a great deal more constructive work and not in itself a complete building This applies especially to those parts of the organisation which affect the medical services and those by which the medical services may be particularly affected

The arrangements for first-aid parties to deal with casualties in the areas attacked, with the first aid posts, some with and some without emergency beds, and the chain of other hospitals behind the first aid area are only laid down in outline It will be the business of medical officers of health in every area to coördinate the different services and see that they work smoothly together The M O H will be, under air raid conditions, in the exact position of the commanding officer of an area in so far as all medical services are concerned He will get information and advice from organisations higher in the administrative hierarchy, some of which will belong to the Ministry of Health and some to the Lord Privy Seal. But it will be the M O H personally who will endure the heat and burden of the day Efforts were made in the House to get the chain of command clearly marked out and clearly understood by all concerned from the Minister or Ministers to the rank and file workers in the field But amendments directed to this end were not accepted So the responsibility of creating the organisation which will make a number of different services work together devolves on the M O H Presumably the M O H's of the London boroughs and of large urban areas all have to arrange for the services under their control to have exercises in mock air raids

Another aspect of the bill of medical interest is that of compensation for injuries It was necessary to make a special arrangement for dealing with compensation for injury or death in the case of volunteers in any of the A.R.P services, for workmen's compensation does not apply to them and their rights at common law are undefined and possibly non existent The scheme of compensation provided for in the bill will apply to volunteers, but the exact scope of the compensation payments were not included in the bill when it left the House of Commons except in a left handed way The Lord Privy Seal said what the terms of compensation for A R P volunteers would be in answer to a parliamentary question over two months ago The outline provision for compensation provided in the bill was linked with this answer by both the Lord Privy Seal and the Financial Secretary to the Treasury But it was widely felt in the House that this patchwork method of legislation left a good deal to be desired The scale of compensation is said to be rather better than that provided by the Workmen's Compensation Act—let us hope that it is

Another compensation difficulty in the bill arose with regard to accidents caused by interference with the pipes or cables of water, gas, electricity or other public utility companies It was desired to guard these companies against unreasonable claims, but in the original draft of the bill they were so far indemnified against having to pay compensation as to shut out possible just claims The Government therefore accepted a Labour amendment to preserve the right to workmen's compensation in appropriate cases

* * *

The organisation for evacuation will create a good many problems of medical practice and a good many sanitary problems, especially where water supply is not adequate And this applies to arrangements for dealing with what the House has been calling the priority classes of children, women with children under five, and nursing and expectant mothers To these will be added certain groups of invalids, and blind, disabled and old people of both sexes But the opinion was expressed in the House again and again that in the case of the aerial bombardment of any large town there will be, in addition to these priority classes, large numbers of other people who will, on their own initiative, seek refuge outside the town in the country reception area nearest at hand If there flow out from London, Manchester, Birmingham, Sheffield, Glasgow, Leith or any other large town or important industrial area any large number of "non priority" refugees, an acute public health problem will be rapidly created And this is another problem which will fall to be solved by the M O H and the local emergency committee of the B.M.A

These are only some of the problems of civil defence which will have to be solved by adaptation of the administrative machine of local government plus the machine of local emergency organisation of the medical profession The Civil Defence Bill has created the possibility of organisation, provided sanctions for necessary action and provided a financial basis for the work But no one in the House of Commons thinks that we have seen the last of civil defence legislation I heard speculations on the probability of amending legislation in the early months of 1940

* * *

There has been a little misunderstanding about the priority classes The Government, through the Ministry of Health, are making arrangements for the evacuation of school children, women with children under five, and nursing and expectant mothers These arrangements are being made through the elementary and secondary schools organisation under the control of the local authority But children attending private schools at which they pay fees, or grammar schools, high schools or public schools will be eligible to take advantage of the Government's plans for evacuation on exactly equal terms with those who attend elementary schools And the provision for mothers of children under five and nursing and expectant mothers applies to all women of all classes or occupations If the middle-class father desires to make private arrangements for his children or his wife he will be able to do so, but only before the main evacuation begins or after the main evacuation is over, unless he can arrange private transport which will not hinder the large public plans of evacuation and the large military movements which will be going on at the same time There is also the question of petrol. All petrol at the outbreak of a war will at once be severely rationed. This means in practice that the general public scheme of evacuation will be the only one practically available in the first few days of an emergency as far as children are concerned and except in very special cases. If evacuation can be timed by those with cars of their own so that children can be taken to the country—and all billets will need to be registered—in advance of an emergency then well and good. But that timing is not going to be easy.

FROM THE PRESS GALLERY

Evacuation of Hospitals

In the House of Lords on June 14 Lord CRAIGMYLE asked for details of the arrangements made for the evacuation of hospitals in vulnerable areas in England and Scotland. He said that this question was causing a good deal of anxiety, and he hoped that real progress had been made since it was last debated. In a way this question was as important as any, because on the smooth functioning of our hospital system in a crisis depended public confidence. Hospitals would have to face a situation entirely different from that in the late war, for the peak would now be reached at once, and in the first days they would have to expect a load of additional cases which must be reckoned, as some of the most sober and experienced experts assured them, in hundreds of thousands. If our hospital organisation proved unequal to the task of handling this sudden load the morale of the civil population would receive a most damaging blow. It was clear that there must be a great displacement of the existing hospital patients from vulnerable areas into less vulnerable ones. It was estimated that 50–60 per cent. of patients would be expected to return to their own homes. These patients were not in hospital except for most serious causes, and if they were to be dispersed to their homes he would like to know what medical and nursing provision was going to be made for their care. Another problem of moving on patients from vulnerable hospitals to those in less dangerous areas was that the inmates of the hospitals or institutions which had to receive them would also have largely to be removed elsewhere. In view of the vast numbers of hospital cases for which provision would have to be made there was probably not even in England, and certainly not in Scotland, sufficient accommodation adequately equipped to deal with the burden. He saw no adequate answer to the problem except the provision on a really wide scale of temporary accommodation in hospital units in safer areas, probably of several hundred beds each. The Minister of Health had said that 40,000 beds were being arranged for in temporary buildings. That was not nearly enough. He doubted whether it was a tenth of the number that ought to be provided for. And even that number was arrived at only by sending home many thousands of people who were in hospital in the interests of their life and health, or by crowding existing institutions in a way which made it most difficult for the personnel to carry on efficiently. He hoped that there would be no cheeseparing in this matter of temporary buildings, and also that in the interests of economy a larger number of patients would not be put in each hut than medical men considered advisable.

Even more important than the provision of hutments, beds, stores and so on was that of trained personnel. During the last war 30–50 per cent. of all the non-fatal casualties were orthopædic cases, and in the air-raids in Spain 50 per cent of the casualties were orthopædic cases. In England they were fairly well equipped to deal with these cases, there being no fewer than 40 orthopædic hospitals where surgeons and nurses could be trained. There was no hospital in Scotland during the last war capable of giving nurses an orthopædic certificate; consequently Sir Robert Jones arranged for American orthopædic surgeons to come to Scotland and it would be true to say that the United States ran the orthopædic surgery of Scotland during the war. Unfortunately Scotland still had no orthopædic hospitals which could treat adults and therefore could train surgeons and orthopædic nurses. Scotland had to steal its orthopædic nurses from England, and there were none too many of them there. Lord Craigmyle asked whether in the allocation of doctors and surgeons to the various civil hospitals the requirements of the Navy, Army and Air Force had been kept in mind. He said that during the last war Sir Alfred Keogh at the War Office was assisted by a consultants' council, and asked whether similar arrangements were being made now. He also emphasised the value of temporary buildings on an adequate scale as providing rallying points for supernumerary nurses, and he drew the attention of the Government to the necessity for providing domestic staff for the hospitals.

Lord ADDISON wanted to know what the Government had done with regard to emergency receiving stations in London. Many medical men thought that there ought to be underground clinics to give first-aid and other treatment for casualties; they ought to have been provided by now

Lord GREVILLE said he was informed that for every bed in London they ought to have at least four beds outside, but he thought that far from that being the case the beds in the base hospitals were more likely to be one for every four beds in London, unless there were large hutting arrangements of which they knew nothing. He understood that the group medical officers were more or less responsible for allocating medical men to the different hospitals. So far they had not been told of any allocation, nor had they been told how these medical men were to be paid; and whether they were to be under any sort of authority with a rank or merely civilians.

Lord HUTCHISON OF MONTROSE said he did not know what arrangements had been made by the Government with the medical schools for earmarking the older students now for the staffing of the hospitals in the country to which patients were going to be evacuated. Many of the smaller hospitals were trying to arrange their evacuation themselves because they felt that many of their patients were quite unfitted to be sent home. These hospitals needed some guarantee from the Government that when the time came for reconditioning the houses which they took over for evacuation purposes they would receive financial aid from the state.

PROGRESS OF THE GOVERNMENT SCHEME

The Earl of LUCAN, replying for the Government, said that the principle of the scheme was that casualties should not be retained in hospitals in the most dangerous areas for any longer than necessary. Accordingly, efforts had been concentrated on increasing hospital accommodation in the safer areas and on providing adequate means of transport. From 30 to 50 per cent of the existing beds in hospitals could be cleared within twenty-four hours by sending home all persons who were no longer in urgent need of hospital treatment. The nursing of patients sent home would be provided for by the district nursing services augmented for the purpose. In London, which was better provided with hospitals than any part of the country, it was hoped to reduce the beds normally in use, and these hospitals in dangerous areas would become virtually dressing or casualty-clearing stations. The hospitals had been requested to make their own arrangements for the transport of patients to their homes where possible, but where it was not possible the women's voluntary services were organising convoys of volunteer cars and drivers. The Ministry were proposing to extend the hospital accommodation in the safer areas first, by crowding additional beds into existing hospitals and institutions; secondly, by up-grading existing institutions by the provision of additional equipment, operating-theatres, and so on, and thirdly, by building hutments, which for the most part would be wards attached to existing hospitals and institutions, but, were being formed into ad-hoc hospitals where no suitable parent institution existed

The great majority of the 100,000 additional beds in existing institutions would be in the safer areas Nearly half of these beds had already been distributed and the distribution was expected to be completed by the end of July Over 150 institutions in England and Wales had been earmarked for up-grading and arrangements were now in hand for the necessary adaptations and extra equipment In the last two months medical officers and engineering inspectors of the Ministry had been visiting these institutions and discussing with the hospital authorities what works of adaptation were required In many cases the work had already begun It had been decided to erect as soon as possible new hospital buildings in the form of huts capable of accommodating an additional 30,000–40,000 beds The Department of Health for Scotland were simultaneously erecting huts capable of accommodating 9000–10,000 beds Arrangements for the construction of three-quarters of the English programme were already well in hand In London the whole region had been divided up into ten sectors radiating from the Thames outwards, and at the apex of each of these was one of the great teaching hospitals which was to act generally as parent to the sector In war casualties would be drained outwards along each sector and the aim had been to provide sufficient hospital accommodation in the outer part of each sector to serve the hospitals in the inner part Approximately 500 hospitals were included in this scheme

EQUIPMENT AND PERSONNEL

In the London region administration and staffing was being developed as part of the sector scheme Group officers appointed from the teaching hospitals were now working out plans for the dispersal both of personnel and equipment from the well-provided institutions in the inner areas to the outer areas which were not ordinarily accustomed to undertake acute surgical work In some cases arrangements were being made for the complete transfer of such of the staff as could be spared from the centre to one of the base hospitals in the outer part of the sector In the provinces much the same scheme was being adopted First-aid posts were being provided for every area of the country

It was estimated that there would be approximately 3000 aid posts in England and Wales, of which between 500 and 600 would be mobile units—that was to say, vans fitted to carry all the medical and surgical equipment of a first-aid post together with a doctor and a nurse Drugs, dressings and surgical equipment sufficient to supply all these aid posts were in process of distribution As a rule these first-aid posts would be accommodated in basements The Ministry were contemplating a further order of beds Orders had been placed for £211,000 worth of drugs and dressings, and it was estimated that this would provide an adequate initial supply for 250,000 casualty beds and also for the first-aid post service Approximately nine-tenths of these drugs and dressings for casualty beds were being distributed to the provinces, as the London County Council had already acquired sufficient reserves for their own hospitals The distribution of drugs and dressings would be completed by the end of this month Orders had been placed for surgical instruments and equipment sufficient for 75 000 casualty beds at a cost of nearly £300,000 This equipment was to be distributed to the hospitals being up-graded, and delivery had already begun Schools were not to be used for hospitals, except one or two public schools which were to be converted into hospitals of a special character—for instance, neurological cases There were to be 40 patients per hut, which gave a spacing of 5 ft between bed centres The requirements of the Navy, Army and Air Force for medical officers were coördinated with civilian requirements through the British Medical Association's central emergency committee, which advised on all questions of medical personnel As regards nurses, the Civil Nursing Reserve for the hospitals was being recruited by the central emergency committee for nursing Recruiting was proceeding steadily, although many more were required

Civil Defence Bill

In the House of Commons on June 14 the Civil Defence Bill was read the third time Dr **HADEN GUEST** said that the medical profession would welcome more information about the medical arrangements and about first-aid parties and casualty work generally, not only for their own use but also to pass on to the public If the public could be assured that a sound plan existed and that casualties would be adequately dealt with that would contribute to maintaining the morale of the people —Mr **HUBERT BEAUMONT** complained that no provision was being made to meet any proportion of the cost incurred by isolation hospitals for protective measures against hostile air attack If they were going to protect their patients, as all agreed they should, it would mean a great additional cost to local ratepayers —Dr **EDITH SUMMERSKILL** said that her father was a doctor, and she remembered that during air-raids in the last war there were waiting in the consulting-room men and women drawn from every grade of society It was interesting to see how they reacted They found that equal treatment was needed for these people, except in one or two cases These became hysterical and could not be kept in the waiting room with the others for fear of panic Therefore they were induced to go to a deep air-raid shelter near at hand The Lord Privy Seal had many times insisted on equal treatment for those exposed to equal danger What was he going to do for the people who did not react equally and who could not bear the nervous strain? He might be forced to change his mind about deep air raid shelters Last July she was in Barcelona when two or three air-raids were taking place every week In the hotel where she was staying most people were pretty phlegmatic, but there were some of a hysterical type who had to go to a deep air-raid shelter She urged the Lord Privy Seal to open his mind a little more on this subject

Sir **JOHN ANDERSON**, Lord Privy Seal, said that in many ways this was a most unpalatable bill, but exceptional times demanded exceptional measures He fully recognised the importance of education of the public The Government had for some time been considering how best they could put before the public the things they ought to know about civil defence Steps in that direction were already being taken He assured Dr Summerskill that problems of mass psychology were by no means left out of account by members of the Hailey committee

QUESTION TIME

JUNE 14–21

Militiamen Standards, Tests and Records

Dr **HADEN GUEST** asked the Minister of Labour what were the standards of physical fitness demanded for the four classes of militiamen when they were medically examined —Mr **LENNOX BOYD** replied The following is a complete description of the four grades The four grades in which men are placed after medical examination are Grade I, men who, subject only to such minor disabilities as can be remedied or adequately compensated by artificial means, attain the full normal standard of health and strength, and are capable of enduring physical exertion suitable to their age Grade II, those who, while suffering from disabilities disqualifying them for Grade I do not suffer from progressive organic disease, have fair hearing and vision, are of moderate muscular development, and are able to undergo a considerable amount of physical exertion not involving severe strain Grade III, those who present such marked physical disabilities or evidence of past disease that they are not fit for the amount of exertion required for Grade II. Grade IV, those who suffer from progressive organic disease or are for other reasons permanently incapable of the kind or degree of exertion required for Grade III. These men are unfit for any form of service.

Mr. GORDON MACDONALD asked the Minister of Labour whether the same standard of physical fitness was applied in the medical tests of the militiamen as was done for recruits for the regular forces.—Mr. LENNOX-BOYD replied: No, Sir; the medical examinations for the regular forces have in view the needs of particular units, whilst the examination of militiamen is of a more general character.

Mr. DE LA BERE asked the Minister of Health whether, in connexion with the calling up of militiamen, any use would be made of the data collected at their initial medical examination to ascertain the physical state of this unselected sample of the population —Mr. ELLIOT replied · Yes, Sir. As my right hon. friend the Minister of Labour stated on the 12th instant, we hope that these data will supply valuable information as to the health and physique of men falling within the age-group concerned.

Students and Military Training

Mr· HARVEY asked the Minister of Labour whether students entering in 1939 a residential college, other than a university college, would be permitted to postpone their period of military training until the conclusion of their course of study.—Mr ERNEST BROWN replied: The students entering colleges in 1939 who will be permitted to postpone their period of military training include in addition to university students full-time students at medical faculties and schools, dental schools, training colleges for teachers, agricultural colleges, veterinary colleges, technical colleges, schools of art and schools of architecture. Applications from students at other colleges will be referred if necessary to the Military Training (Hardship) Committees

Mr. GRAHAM WHITE asked the Secretary of State for War if university students beginning a period of military training at the end of the university year would be given reasonable facilities during their training to enable them to apply for posts which might be available on completion of their training.—Sir VICTOR WARRENDER, financial secretary to the War Office, replied · All militiamen will be given due consideration in this respect.

Civil Nursing Reserve

Mr. BROOKE asked the Minister of Health whether he was aware that volunteers for the Civil Nursing Reserve who sent in their application forms to Romney House as directed were liable to be left for many weeks without receiving any communication whatever in reply; and whether he would secure that in the future all volunteers for this service received, at any rate, an early formal acknowledgment of the receipt of their application, with a promise that they would be sent a further communication when their application had been examined —Mr. ELLIOT replied: I am informed by the Central Emergency Committee for the nursing profession that all applications are sent within 48 hours of receipt to their local representatives to arrange the necessary interviews. In some places there may have been a little delay in getting into touch with the candidates, but every effort is made to avoid this and in London alone some 2000 candidates have been interviewed and accepted for training during the last month I am asking the committee to consider issuing acknowledgements as suggested by my hon friend

Protection against Liquid Vesicants

Mr. DAY asked the Lord Privy Seal what provisions had been made by the Government by which members of the civilian population would be able to protect themselves against vesicants in liquid form in the case of air-raids; and whether it was proposed to issue protective clothing to the civilian population at public expense.—Sir JOHN ANDERSON replied: It is not proposed to issue protective clothing to the civilian population at the public expense. Members of the public need run little risk of coming into contact with vesicants in liquid form if they take cover when an air-raid warning is given and do not emerge, if gas has been used, until the air-raid wardens have either signalled that the particular area is clear or have indicated which parts of it are contaminated.

Medical Needs of Unemployed Persons

Mr. LEONARD asked the Minister of Labour if he had considered the representation made by the county councils of Scotland, urging that the medical needs of persons receiving aid from the Unemployment Assistance Board be borne by the Board, and if he would take steps to gain such powers —Mr. ERNEST BROWN replied. I have seen a copy of a circular letter on this subject from the Association of County Councils in Scotland to all members of Parliament for Scottish constituencies. The question raised would obviously affect a wider area. The present arrangements were deliberately adopted by Parliament and I know of no good reason for altering them.

Mr. LEONARD · Has the Minister not considered the great amount of work falling upon local authorities in various parts of the country, and does he not think that ought to receive some recognition?—Mr BROWN: To do what is asked would in many cases involve a duplication of medical services This is a highly specialised service and that was one of the factors taken into account in coming to a decision.

Special Nourishment Allowances

Mr. GALLACHER asked the Minister of Health whether he was aware that serious delays often occurred in the granting of special nourishment allowances by the Unemployment Assistance Board, after the production of a doctor's certificate, owing to the practice of Boards sending applicants to local authorities for milk or other items of diet, and what steps he was taking to see that the cost of extra nourishment for Unemployment Assistance Board applicants and their dependants was borne by the Unemployment Assistance Board and not by local authorities, and was the same practice followed in recommendations for extra nourishment in connexion with maternity needs —Mr. ELLIOT replied · I am not aware of any serious delays as suggested by the hon member, but if he will send me particulars I shall be glad to look into any cases he may have in mind With regard to the second part of the question, where extra nourishment is given generally by a local authority under its public health powers as part of treatment, there would not appear to be any justification for excluding the Board's applicants from the scope of the service.

Motor Vehicles and the Noise Nuisance

Wing-Commander JAMES asked the Minister of Transport what steps he was taking to deal with motor vehicles and motor-cycles now upon the roads equipped with inadequate silencers; and what further steps he was taking to check this continuing nuisance —Captain WALLACE replied: As a result of discussions following the report of the departmental committee on noise in the operation of mechanically propelled vehicles, the manufacturers of motor-cycles undertook in 1936 that no motor-cycle producing an offensive degree of noise would in future be put on the market. A similar undertaking was given by the manufacturers of motor-cars. Such an arrangement seems to me preferable to the making of regulations imposing a precise maximum limit of noise which it would, in any case be impracticable to enforce without the use of a large number of delicate noise-measuring instruments. The police can take action with regard to inadequate silencers; more than 10,000 noise offences were dealt with by them during 1937, over 6000 of them by prosecution. Arrangements have also been made with the manufacturers of motor horns with a view to the elimination of the more noisy types.

Port Health Authorities

Mr BEN SMITH asked the Minister of Health what arrangements existed for consultation and coöperation among port health authorities.—Mr. ELLIOT replied: The principal port health authorities in England and Wales are members of the Association of Port Health Authorities of the British Isles The association meets twice a year, and has a general committee and a medical committee which meet at more frequent intervals. Special committees are also from time to time appointed to deal with urgent or specially technical questions

Foreign Hides and Anthrax

Mr THORNE asked the Home Secretary whether foreign hides imported were required to be registered on entering this country, if he was aware that a man working at Messrs Waring, Warrington, died after contracting anthrax from skins that he had been handling which were known as water buffalo but their source could not be given, and if he intended taking any action in the matter—Mr PEAKE, under-secretary, Home Office, replied: I presume the hon member is referring to the case of a woman named Lydia Clive I understand that she had shortly before contracting the disease been handling hides of various kinds, including water buffalo hide from Siam It is recognised that hides from numerous parts of the world are often infected, and my right hon friend is advised that there would be no practical advantage from the point of view of preventing the disease in establishing the precise origin of each consignment of hides imported into the country

Sanatorium Waiting-list

Mr GALLACHER asked the Minister of Health the total umber of patients receiving treatment for tuberculosis the last convenient date and the number of persons ho had been awaiting treatment for more than 10 days that date from local authorities in England and Wales —r ELLIOT replied The number of patients who, on the st April, 1939, were receiving treatment in residential stitutions under the arrangements made by local uthorities in England and Wales for the institutional eatment of tuberculosis was 27,676, and the number of ersons who had been awaiting such treatment for more han 10 days was 1772

Rheumatism in Children

Mr JAMES GRIFFITHS asked the Parliamentary Secretary o the Board of Education whether there had been any ncrease in recent years in the incidence of rheumatism mong school-children, whether such increase was ronounced in any parts of Wales, and whether any pecial attention was being given to the problem —Ir KENNETH LINDSAY replied: There does not appear o be any reliable statistical evidence of an increase in the ncidence of rheumatism in school-children either in England or in Wales Owing to the difficulty of diagnosis the returns of School Medical Officers vary considerably from one area to another The percentages of children with organic heart disease, which is in the main due to rheumatism, are higher in Wales than in England, but have remained practically stationary during the last four years, and there is no evidence of an increase in mortality due to this cause I am glad to say that, following the pioneer example in Wales of Cardiff, some other authorities in Wales are providing special hospital schools for rheumatic children, and supervisory rheumatic centres Provision of this kind is very desirable

Sale of Drugs

Mr GARRO-JONES asked the Minister of Health whether his attention had been drawn to complaints in various Dominion government publications to the effect that their control over the sale of harmful or worthless drugs was hampered by the ineffective state of the law on this subject in Britain, and whether in his consideration of measures to deal with this evil he would undertake to include consideration of the more effective measures now in force in Canada, Australia, South Africa, and the United States of America —Mr ELLIOT replied The answer to the first part of the question is in the negative and to the second part is in the affirmative

Offence against Dentists Act

Mr PARKER asked the Home Secretary if his attention had been called to the case of Mr A E Browne 33 Harrow Road, Gidea Park, Romford who was imprisoned when convicted by the Stratford police-court of an offence against the Dentists Act, 1921, and, as he was not allowed the time to pay the fine applicable to the offence although he wished to find the necessary money, would he consider remitting the sentence—Sir SAMUEL HOARE replied The hon member has been good enough to send to me particulars of this case I have caused inquiries to be made and am informed that the defendant pleaded guilty and had been twice previously convicted of similar offences The justices took a very serious view of the case and, in the exercise of their discretion, refused to allow time for the payment of the fine I regret that, having reviewed all the circumstances of the case, I can find no grounds which would justify me in advising any interference

RESEARCH IN STOCKHOLM

Another link in the chain of special institutes which is being established in connexion with the University of Stockholm, an institute for biological research, was recently opened by the Crown Prince of Sweden The institute has been made possible largely through a generous grant from a fund established by the Swedish industrialist Axel Wenner Gren, whose name it bears Its purpose is research into the basic features of the physiology of the cells and tissues It comprises five departments —cellular physiology, evolutionary physiology and heredity, physiological chemistry, metabolic research, and biophysics The department for metabolic research will mainly study diabetes The institute will maintain constant contact with both medical and industrial institutions, so as to contribute directly to the improvement of working conditions Experiments are now being made in yeast cultivation, which are supported by the Swedish yeast factories, and the National Association for Combating Tuberculosis is financing investigations into the factors affecting the growth of the tubercle bacillus

The committee appointed to plan the distribution of the fund of £258,000 which King Gustav V of Sweden received as an 80th birthday gift from the Swedish people has now submitted its proposals The King has expressed a wish that the fund should be applied to investigations into disabling diseases, especially infantile paralysis and rheumatism It is proposed that the money should be divided into a research fund, an institute fund and a reserve fund, research into the origin of the diseases in question being the main purpose Allocations will be made to enable research workers to devote their whole time to the work and to make visits abroad During 1940–44 maintenance grants will be made to Prof Svedberg, Prof Arne Tiselius and Dr S Gard for an investigation into the virus of infantile paralysis The institute fund will contribute to the erection, equipment and maintenance of an institute for research in disabling diseases, which will collaborate with a projected rheumatism department at the Caroline Hospital in Stockholm

THE LANCET 100 YEARS AGO

June 22, 1839, p 460

From a note on the nervous system, by Dr C W. B Lane

Thus, we have two distinct nervous systems in the animal frame. How are they combined? How is the unity of the body constituted? I believe that there is a communicating *system of nerves*, which we may denominate sympathetic, by which connection is established between organic and animal life Under the present system we attribute the locality of pain in disease to the affected organ itself, though *no sentient* nerves can be traced in its structure Why should we attribute to a living solid in a state of disease a *property* of which there is not a trace in a state of health? The sensation arising from disease frequently is not even confined to its vicinity, for example, in hepatic and renal affections Again, in complaints of the internal organs, how exquisitely tender an adjoining *surface may* become, though no degree of compression is exerted which could produce physical effect on the diseased *organ* Search through the vast range of morbid states, and in the above simple theory will be found some *elucidation* of the mystery yclept sympathy, which has ever engaged the attention of medical philosophers

JOHN BAKER

KT., M D, C M. ABERD.

Sir John Baker died on June 13 at the age of 77 after a few weeks of illness. He had retired nearly twenty years ago from the public service to which he had devoted his life. Born in 1861 and educated at Marischal College he graduated in medicine at Aberdeen University in 1883, and in the same year became assistant medical officer at the Royal Asylum, Dundee In September, 1886, he was appointed to a similar post at Broadmoor criminal lunatic asylum. In March, 1888, he was transferred to H.M. prison service and served at Portsmouth and Portland convict prisons and also at Pentonville prison. In 1898 he was made secretary to the departmental committee on prison dietaries and in the following year returned to Broadmoor as deputy medical superintendent In 1910 he succeeded Richard Brayn as superintendent and remained in that office until his retirement in 1920. Before the opening of Rampton criminal lunatic asylum, with W. C. Sullivan in charge, Baker advised the Home Office about its planning and administration, and he was the accounting officer for Rampton as well as Broadmoor until the former was transferred to the Board of Control. During the late war he was in charge of insane German prisoners of war at the Crowthorne War Hospital with the hon rank of major, R.A M.C His work at Broadmoor during this time was extremely onerous owing to the type of patient and the unavoidable reduction of personnel. He was, however, ably assisted by Dr H. P. Foulerton (who later became medical superintendent) and by his old friend James Scott, formerly medical officer of Brixton prison and later governor of Holloway, who interrupted his retirement for the purpose "There is no doubt," writes W N E, "that the difficulties of administration and the many anxieties inseparable from the management of such an institution during the war hastened his retirement at the age of 58, for like many reserved men he felt things deeply He was somewhat conservative in his professional outlook, but he introduced into the lives of the patients the improvements which were possible at the time and was always deeply interested in the welfare and happiness of the patients and staff The years of his greatest experience were unfortunately hampered by the exigencies of the war period when innovations were necessarily restricted. He was a trusted and respected friend of the patients' and was held in affectionate regard by the staff, they recognised him to be an able administrator and admired and respected his great ability, distinguished service and uniform success" In 1919 his services to the state were recognised by a knighthood

Baker was for some years a Home Office expert in lunacy and took part in the statutory inquiries on convicted murderers under section 2 (4) of the Criminal Lunatics Act 1884. He contributed to the *Journal of Mental Science* articles on insanity in English local prisons, on epilepsy and crime, on female criminal lunatics and on general paralysis and crime. He also wrote (1892) articles—which are still of interest—on kleptomania and pyromania in Hack Tuke's "Dictionary of Psychological Medicine" In 1901 he found that the majority of epileptics of either sex received into Broadmoor had committed homicidal offences as distinct from other offences against the person and offences against property. He
stated that the brain-weights of homicidal fe
lunatics were below the normal standard of s
women and the brain-weights of lunatic criminal
the thieves and fire-raisers—were still lower He
found among the Broadmoor patients suffering f
general paralysis of the insane that the majo
had committed offences against property, ab
one-fourth of the total had committed crime
violence, and less than 7 per cent. had commi
sexual offences This finding was instructive as
that time it was suggested that sexual offences w
typical of the general paralytic It is unfortun
that in later years administrative obligations preve
him from further publishing the results of his w
knowledge and experience.

Sir John Baker was unmarried. He was a ge
host, a staunch friend and interesting compan
He had few interests outside his professional work
no hobbies; but he enjoyed a game of bridge
golf until failing health deprived him of the zest
play. After his retirement he lived for some ye
at Southsea and then moved to Camberley, near
the institution in which he had worked for so long.

DAVID WATERS SUTHERLAND

C I.E., M.D. EDIN, F.R.C P., F.R.S E, I.M.S.

Colonel Sutherland, formerly professor of medi
and principal of King Edward Medical Colle
Lahore, died at Belhaven, Dunbar, on April 19
the age of 68. He was an Australian by birth
was born at Byninyong, Victoria, and educated at
grammar school at Creswick, Victoria, and
Melbourne University. From there he went to E
burgh, where he took first-class honours in his
in 1893 He joined the Indian Medical Service
after qualification and saw active service in
Chitral campaign in 1895, being mentioned
despatches. In 1897 he was appointed to the ch
of pathology at the medical college of Lahore
five years later became professor of medicine.
was a lucid and interesting teacher, and as dean
the medical faculty of Punjab University earned
confidence and respect of his students by
sympathy and strict sense of justice Apart from
teaching he was from 1907 to 1920 medical super
tendent of Mayo Hospital, Lahore, where he built
a large consulting practice. There was always m
demand for his services than he could possibly
and he came to be regarded as one of the lea
physicians of northern India. His generosity a
hospitality were unstinted and he made many frien
throughout the Punjab. During the late war he w
appointed hon surgeon to the Viceroy and he act
as staff surgeon at divisional headquarters, receivi
the C.I E. for his services. In 1919 he was co
sulting physician to the Afghan Field Force
retired from his chair at Lahore in 1926

Colonel Sutherland married Princess Bam
daughter of the Maharaja Duleep Singh, who survi
him. They had no children.

WILLIAM HENRY NEALE

M D. LOND., F.R G.S.

Dr. William Neale, who died on June 16 age
was born in Java, the son of Dr Richard Neale
had a large general practice in St. John's Woo
compiled that remarkable work "The Medical Di
William Neale qualified from University C
Hospital in 1879 and when he was house-physic
arctic explorer, Benjamin Leigh Smith, was ad

his care for a carriage accident Neale had been fond of the sea and he was a member, still a student, of the volunteer naval reserve ugh Smith was glad to secure his services as s to the expedition he was planning, and in nter of 1880–81 Neale went with the *Eira* second exploration The steam yacht was d by an iceberg and sank, and the whole crew hrough many months on the ice, under the shelter of huts constructed from sails and saved from the wreck During the whole of me they lived on fish and on wild fowl which hot Eventually they were brought home by h party Not one of the crew had scurvy or her illness Neale related this experience to oyal Medico Chirurgical Society and told the Zoological Society of London about the natural history of Franz Josef Land

On returning home he took the London M D and settled down in practice with his father, and later with two partners, carrying on this practice to the very evening of his death A near contemporary writes of him "Brought up in the atmosphere of general practice, and with great ability and good judgment, he was an able and resourceful practitioner and was greatly beloved by a very large circle of patients In fact all his patients were his friends"

Whilst seemingly in his usual health on June 16, Dr Neale went out in the late evening, as was his wont, to post a letter; he collapsed and was found dead in the street only a hundred yards from his home He leaves one daughter

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MEDICAL NEWS

rsity of Oxford

rector and fellows of Exeter College invite applica or a Staines medical fellowship for research at m one of the medical sciences It is tenable for re than five years, and the annual stipend will be nth allowances Particulars will be found in our ement columns

rsity of Cambridge

ecent examinations the following candidates were ful —

THIRD EXAMINATION FOR M B B CHIR

I, Surgery, Midwifery, and Gynæcology—G N Allen n, P T Anderson, L B G Bennett J B Bramwell, Bull, J A. Campbell, B E Camus J L Cardwell J A L M Cossens, P J R Davis, H P Dick J E G Earle 0 Evans I S Eve G R Faber T L Fawssett rham, P G H Gell G S Gladstone, G D Graham Gretton Watson, L N Grunbaum, A Hargreaves, Hetherington, B L F Heydon J M Holford R M K. G Irving, P W Isaac, G H P John, H Kalmanoff, enchington, E J C Kendall, R D Kennedy, W N t, W H Kirkaldy Willis, J A Lorimer, A C Mackay, MacLellan, T K Maurice, J M Mennell, K J Merris, orley J Murray G Oppenheimer, B F Parker Wood, rcy, L O Petersen, T J A Phillips, M R Pollock, Stevens, J F Thompson R O Tufton, F H Tyrer t Upjohn J S H Wade, and R J T Woodland

rsity of Liverpool

Owen Herbert Williams has been appointed pro of surgery as from Oct 1 in succession to Sir t Kelly

Herbert Williams graduated in 1906 at Edinburgh and ident medical officer at the Leith Public Health Hospital ok his Edinburgh surgical fellowship in 1909 and a in 1911 At Liverpool he became senior resident medical and later surgeon, at the Mill Road Infirmary and was ted to the honorary staff of the Royal Southern Hospital the late war he served in France with a field ambulance surgical specialist at the 51st Casualty Clearing Station, a major's commission He took the F R C S in 1923, came lecturer in clinical surgery in the university He resent surgeon to the Royal Liverpool United Hospital a Liverpool Radium Institute, and lecturer in operative His publications cover a wide range of surgical

rsity of Glasgow

Charles Frederick William Illingworth has been nted regius professor of surgery in place of Prof bald Young, whose tenure of office expires on 30

Illingworth who is 40 years of age and comes from served as a pilot in the Royal Flying Corps and Royal rce from 1917 to 1919 He graduated at Edinburgh in nd after house appointments there and elsewhere returned ral tutor at the Royal Infirmary He became F R C S E 5 and in the same year collaborated with the late Sir Wilkie in a study of cholecystography Still working Royal Infirmary and in the department of experimental y he was appointed a part time worker under the Medical rch Council and with R D Mackenzie investigated the stroma No 1 He was also granted a surgical scholarship Association of Surgeons and published observations on adder disease, receiving a gold medal for his M D thesis s appointed to the surgical staff of the Edinburgh Western al Hospital and the Edinburgh City Hospital and in became university lecturer in clinical surgery In the same e produced with B M Dick their Textbook of Surgical gery" and in 1938 he published "A Short Textbook of ry" Our issue of May 6 contained a paper from him on rhage in jaundice

Royal College of Surgeons of England

At the recent primary examination for the fellowship of the college the following candidates were successful —

L H Aitken, M B N.Z, Middlesex, Gwladys V S Aldridge, Univ Coll, M. Arnold, M B Witwatersrand, Middlesex, M Bates St Bart's, W M Beattie, M B Camb, Lpool B E Blair, M B Lond St Thos, R V Blaubaum, M B Melb Univ Coll and Middlesex, K E Bond, M.B Camb, St. Thos, R N Briggs, Univ Coll, D B Brown M B Glasg, Middlesex, Annette G Cade, Univ Coll; H L Catchlove, M B, B S Melb, Middlesex S Chatterjee, M B Calcutta, Univ Coll and Middlesex, R A Christianson, M D Western Ontario, Middlesex and Univ Coll, A F Clift, M R C S, Middlesex and London Hosp, D D Cranna, M B Manc H A Daniels, M.B Dubl, Univ Coll and Middlesex, O B Dickinson, M D Queen's Univ, Ontario, H D Drury, M B Melb, Middlesex, J A. C. Edwards, M B Lond, St Bart's, M R. Ewing, M.B Edin. Nora F M Falk, Manc, R M Fawzi, M B Cairo, London Hosp, P A M FitzGerald, M B N U I Dublin, H B Gatenby, M B Sydney, Middlesex, A Gild M B Adelaide, Durham, J E Gray, M B Durh; S G Griffin, M B Lpool G J Hanly, M B N U I, Dublin, H A Haxton, M B St And, Middlesex W G Hendry, M B Aberd, Middlesex, L Henry, M D Lpool, I M Hill, St Bart's and Middlesex C Hollenberg, M D Manitoba, Univ Coll, N O Hughes, M B Belf K F Hulbert, M.B Lond, Middlesex I Jacobson M B Cape Town, Middlesex, G B Jones, M.B Lond, Univ Coll, T L Kennedy, London Hosp, P H Lenton M B Camb, Middlesex, H R W Lunt, M B Lpool, R J B McEwen, M B Sydney, Univ Coll, Middlesex and Lpool A M Mair, M B Aberd, St Mary's, M A Margo, M R C S, Univ Coll, J P Mitchell, Middlesex, C T Moller, M B Witwatersrand Middlesex and Univ Coll, D L Mollin, Cardiff and Middlesex, D Narayan M B Lucknow, Univ Coll and London Hosp, J D Ogilvie, M B Lond, St Bart's H. Petty, Leeds, F P Raper, M B Leeds, Middlesex, H Rees, B M Oxfd, Univ Coll, D J Robertson, St Bart's and Univ Coll, T F Rose, M B Sydney, Middlesex, P B Ryan, M B Brist, N C Shah M B Bombay, Univ Coll, D C Sinclair, M B St And, Middlesex, M R Sinclair, M B Camb, St Bart's and St Mary's J W Spence, M B Sydney, Middlesex, W E Springford, M B Lond, King's Coll and Charing Cross; M J L Stening, M.B Sydney, *Middlesex*, H D Sutherland M.B Adelaide, Middlesex C H Tanner M B Lond, Cardiff, I J Thomas London Hosp, F Troensegaard Hansen M R C S, Univ Coll and Middlesex A A Wearn, M B Sydney Middlesex R W White, Middlesex and R Wilson, M D McGill, Univ Coll

British Journal of Physical Medicine

This journal has been purchased from the Actinic Press by Butterworth and Co (Publishers), Ltd, and will be published by them from 3, Bell Yard, London, W C 2, Dr R King Brown and Mr B D H Watters M Sc, will remain medical and science editors respectively, and Dr A Clark will remain managing editor

Milk for Mothers and Young Children

The Scottish Milk Marketing Board has introduced a scheme for supplying to local authorities, at a reduced price, the milk needed for nursing and expectant mothers and children under the age of five The aim is to provide one pint of milk free or at a reduced price not exceeding *2d per pint*, to those coming within the income limits adopted by the authority for the purpose The Department of Health for Scotland have suggested that the application of a general medical test should not be a necessary preliminary to the normal supply of one pint of milk per day They have approved the proposals of Glasgow corporation, which are the first to be submitted under the scheme

Welsh National School of Medicine

A committee of former students of the medical school at Cardiff is organising a London Welsh Medical Dinner which will be held at Grosvenor House, London, W 1, on Saturday, Oct. 14, at 8 P.M The hon. secretary is Mr. A. L Gunn, 51, Harley Street, W.1.

Medical Department, Admiralty

This department will move next week to Queen's House, 64, St James's Street, London, S W.1. It is desired that during the week of removal correspondence should be reduced to a minimum. The new telephone number will be Regent 7481.

St. John's Hospital Dermatological Society

Prof. G. Grey Turner will deliver the sixth Prosser White annual oration of this society at 5 P.M on June 28 at the Royal Society of Medicine, 1, Wimpole Street, W.1. His subject is malignant melanomata

Papworth Village Settlement

The annual meeting of this settlement, which was announced for June 30, has been postponed It will be held at the Park Lane Hotel, Piccadilly, London, W 1, at 3 15 P M , on Tuesday, July 4, and the Duke of Kent will preside

A Russian Pharmacopœia

A new Pharmacopœia of the U S S R. is being compiled by a committee appointed by the commissariat of health meeting under the chairmanship of Prof Bergholtz The last pharmacopœia was published in 1924 ; the new one will be issued in 1941.

Service Prizes

The Alexander memorial prize for 1938 has been awarded to Major H J Bensted, M C , R A M.C It consists of a gold medal and a sum of £40, and is awarded annually to an officer of the Royal Army Medical Corps for professional work of outstanding merit The Leishman memorial prize, also given for work of outstanding merit, and consisting of a silver medal and £30, goes to Major David Fettes, O.B E , F.R C S.E , R A M C.

Dr. Thomas Simpson, medical officer in Nigeria, has been awarded the North Persian Forces memorial medal for 1938, for his paper entitled Yaws and its Treatment in the Bamenda Division of the Cameroons under British Mandate (*West Afr. med J* 1938, 10, 10) This medal is given for the best published paper on tropical medicine or hygiene by a medical officer, of under twelve years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or Colonial Medical Services

Mental Hygiene Congress

The sixth congress of the European Committee for Mental Hygiene was held at Lugano, Switzerland, from June 4 to 6, under the presidency of Dr. A Repond of Switzerland. The delegates included Sir Laurence Brock, chairman of the Board of Control, and Sir Hubert Bond, the senior commissioner, representing the British Government, and Dr. Doris Odlum, representing the National Council for Mental Hygiene. The subject of discussion was "Mutual Understanding and Mental Hygiene," and among the papers read was one on primitive civilisation and mutual understanding by Dr Emanuel Miller and one on mutual understanding between human groups and between peoples by Dr. G. R Hargreaves

The congress ended with a discussion on the immediate tasks of mental hygiene in Europe Dr. Doris Odlum proposed that the committee should make a survey of the various aspects of mental hygiene in all the European countries, as the information would be of the utmost value both to those who were more advanced and those who were more backward in this field She also proposed that the question of establishing an international nomenclature of mental disorders should be pressed by the European committee, for this was one of the essential bases of scientific investigation in relation to mental health.

The members of the congress were entertained to a banquet, and an evening party was held on the Lake of Lugano by the Swiss committee for mental hygiene, and by the town of Lugano In all 14 countries were represented, and the total attendance was over 80 Before the congress opened a business meeting was held a constitution for the European Committee fo Hygiene was formulated Prof. Augusto Ley of was elected president and Dr. H Bersot of Le La Switzerland, hon secretary and treasurer of th mittee After the congress invitations were receiv Sweden and Holland, and it is hoped that the next will be held in one of these countries in June, 1940.

Medical Diary

June 26 to July 1

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W
SATURDAY
Orthopædics 3 P M (St Vincent's Orthopædic Hosp Pinner), demonstration of cases

BIOCHEMICAL SOCIETY
SATURDAY —3 P M (at National Institute for Research *Dairying, Shinfield, near Reading*), communications demonstrations

ASSOCIATION OF CLINICAL PATHOLOGISTS
SATURDAY —9 30 A M (at Coventry Joint Laboratory, St Stanton Road, Coventry), meeting on the Clinical Pathol of Tuberculosis Dr S Roodhouse Gloyne testing of milk for tubercle bacilli Dr Herta Schw Tests for differentiating saprophytic acid-fast bacteria tubercle bacilli Dr E N Davey Relative merits culture and guineapig tests in the diagnosis of tuberculo *Dr C E Dukes* Excretion and identification of tub bacilli in urinary tuberculosis Dr W Pagel. growth-retarding power of the blood-serum towards tubercle bacillus, and the chronic type of dissemin tuberculosis Dr A. F Sladden Association of silic *and tuberculosis*

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Duc Road, W 12
MONDAY —4 30 P M , Dr R C Wingfield Pulmo Tuberculosis
TUESDAY —4 30 P M , Sir Arthur Hall Meningitis and A Infections of the Central Nervous System
WEDNESDAY —NOON, clinical and pathological confer (medical) 2 P M , Dr J D MacLennan Bacteriolog *Diagnosis of Intestinal Infection* (II) Dysentery, Cho *and other Infections* 3 P M , *clinical and patholog* conference (surgical)
THURSDAY —2 15 P M , Dr Duncan White radiolo demonstration 3 30 P.M , Prof Vernon Mottram Mate Nutrition and the Prenatal Child
FRIDAY —2 P M , clinical and pathological confer (obstetrics and gynæcology) 2 30 P M , Mr J B Hu Hernia and its Treatment
Daily, 10 A M to 4 P M , medical clinics, surgical clinics operations, obstetrical and gynæcological clinics operations

ST GEORGE'S HOSPITAL, S W 1
THURSDAY —5 P M , Dr Anthony Feiling · neurolo *demonstration*

HOSPITAL FOR SICK CHILDREN, Great Ormond St W.C 1
THURSDAY —2 P M , Mr Denis Browne · The Acute Abd in Children 3 P M , Dr. Ian Cathie · The Collect of Pathological Specimens
Outpatient clinics daily at 10 A M and ward visits at 2 P

ST JOHN'S HOSPITAL DERMATOLOGICAL SOCIE 5, Lisle Street, Leicester Square, W C 2
WEDNESDAY —5 P M (*at the Royal Society of Medi* 1, Wimpole Street, W 1), Prof Grey Turner Malign Melanoma (Prosser White oration)

FELLOWSHIP OF MEDICINE AND POST-GRADU MEDICAL ASSOCIATION, 1, Wimpole Street, W 1
MONDAY to FRIDAY —ST MARK'S HOSPITAL, E C 1, all course in proctology —HOSPITAL FOR DISEASES OF SKIN, *Blackfriars*, E C 4, afternoon course in dermato

SHEFFIELD UNIVERSITY
MONDAY —10 A M , Dr C G Imrie Diabetes and its C plications 2 P M , Prof E F Finch . The Acute Abd
TUESDAY —10 A M , Dr E F Skinner . Psycholog General Practice (I) 11 30 A M , Mr R St L Brockl demonstration of casualty cases 2 P M , Mr W. J and Mr J C Anderson Rectal Diseases
WEDNESDAY —10 A M , Dr R Platt Nephritis and A *Diseases* 2 P M , Mr Glyn Davies Vulvo va Abnormalities 3 30 P M , Mr F W Holdswo Fractures
THURSDAY —10 A M , Mr H B Yates . demonstratio local anæsthesia 11 30 A M , Dr J L A Grout . logy 2 P M , Mr W Hynes Acute Pyogenic Infect 3 30 P M , Mr A W Fawcett . Pyogenic Infections of Hand
FRIDAY —2 P M , Prof G L Roberts Diseases of the M and Tongue 3 30 P.M , Dr F Ellis · Same Subject.
SATURDAY —10 A M , Dr A G Yates Neurology 11 30 A Dr E F Skinner · Psychology in General Practice (II)

Appointments

CRP H G E , F R C S M R C O G obstetric surgeon to utpatients Queen Charlotte's Maternity Hospital

OCK, LEON, F R C S , resident surgical officer at the ordon Hospital, S W 1

LE, W T , M D Manc , junior assistant medical officer, orth Middlesex County Hospital

R H., M B , M R C P Lond , *assistant physician to the* hildren's department, City of London Maternity Hospital

URN, N S , M B Edin , resident medical officer at the ark Hospital, Davyhulme

EACH, V P M.B Edin D P H , assistant medical officer f health and resident medical officer at the Isolation ospital, Norwich

ERSH, MARY D M B Lond D R C O G , resident ssistant obstetric officer at the Crumpsall Hospital

ES H H Ch.M Sydney F R C S , visiting ophthalmic urgeon, Redhill County Hospital Edgware

A F , B.M Oxfd, *research student in the department* f clinical medicine, Oxford University

AR, R A R , M B Glasg , assistant medical officer North iddlesex County Hospital

Middlesex County Hospital —

TY J M M B Adelaide, *junior resident assistant medical* officer

MPHREYS, SYBIL M , M B Lond assistant medical officer (anæsthetist)

TYNE, S S , F R C S E , M R C O G , obstetrician (grade I)

EL, WALTER, M.D Berlin assistant pathologist and

OG OCNY, ANDREW, F R C S , visiting ophthalmologist

County Council —The following appointments and ransfers are announced (A M O (I) or (II) = assistant medical officer class I or class II) —

RTY, C T M D Paris, L R C P & S E A M O (II), Highgate Hospital

LDEN MARGHERITA N , M B Lond , A M O (II) Norwood Hospital

RKE, JEREMIAH, M B N U I , A M O (II), Paddington Hospital

Y, MARGARET A , M B Aberd , A M O (II), St Mary, Islington ,

KEN THEODORE, M B Lpool assistant district medical officer

NUEL, I N , M.R C S , assistant district medical officer

THUR, D W , F R C S , A M O (I) St George in the East and

NDIE A W , M B Aberd A M O (I) Lewisham

al Referee under the Workmen's Compensation Act, 1925 Dr D S MURRAY of Stratford on Avon for the ounty Court District of Evesham (Circuit No 22), the ounty Court Districts of Banbury and Shipston-on Stour Circuit No 36), and the County Court Districts of Alcester, tratford on Avon and Warwick (Circuit No 53)

Vacancies

further information refer to the advertisement columns

ea Royal Infirmary —Asst M O in X ray and radium depts , £350

Dental Corps —Commissions

-under Lyne District Infirmary —H S at rate of £150

ks General Hosp —Radiologist £800 Also H.S and anæsthetist £150

ham Bethlem Hosp , Monks Orchard Eden Park —Res H P , at rate of £150

ingham Queen Elizabeth Hosp —Res anæsthetist, £70

ingham The Children's Hosp —Sen cas H S at rate of £125

ingham City —Jun asst M O for Rubery Hill and Hollymoor Divisions £350

ingham Maternity Hosp —Res M O and reg , £200 Also H S , at rate of £75

ord, Infectious Diseases Hosps —Med supt £850

ford Royal Infirmary —Res. M O and asst pathologist £250 Res surg O £250 Also H P to radium and skin depts , at rate of £100

ton Royal Alexandra Hosp for Sick Children —H P , £150

ol City and County —Asst M O H £500

l General Hosp —Cas H S at rate of £100 Two H P 's, three H S.'s res obstet officer and H S to spec. depts , each at rate of £80

Postgraduate Medical School Ducane Road W 12 — First asst in dept of medicine £300 to £600 Also H.S to surgical unit, at rate of £105

Red Cross Society Clinic for Rheumatism Peto Place, N W 1 —Hon neurologist

bridge Addenbrooke's Hosp —H S and H S to spec depts , each at rate of £130

iff Royal Infirmary —Res anæsthetist at rate of £100

ea Hosp for Women, S W 3 —Anæsthetist 30 gns.

er City Hosp —Res M O £200

erfield and North Derbyshire Hosp —Res surg O £300 Also cas. O and fracture H S at rate of £225

ton County Borough —Asst M O H £400

ntry and District General Infirmary —Sen H S £200 Also second H.S., £150

y County Borough —M O H and school M O £900

Durham County Council —Res med supt for School Aycliffe Colony, £800

Eastbourne, Royal Eye Hosp , Pevensey Road —H S at rate of £100 and £175

Elizabeth Garrett Anderson Hosp , Euston Road, N W 1.—Hon first asst to obstetric dept Asst. pathologist, £250 Med reg , £100 Also H P first, second and third H S , and obstetric asst , each at rate of £50

Gloucester, Barnwood House Hosp for Mental and Nervous Disorders —Second asst. M O , £450

Gloucestershire Royal Infirmary &c —Asst to radiological dept , £500

Hartwoodhill Adult Mental Defective Colony, near Shotts, Lanarkshire —Med supt , £700

Hosp for Consumption and Diseases of the Chest Brompton, S W 3 —H P , at rate of £50

Hosp for Tropical Diseases, 25, Gordon Street W C 1 —Three H.P 's, each at rate of £120 Also ophthalmic surgeon

Hosp of St John and St Elizabeth, 60, Grove End Road, N W 8.—Res H P , at rate of £100

Huddersfield Royal Infirmary.—H S to abnormal maternity dept., at rate of £150

Hull, Beverley Road Institution —Asst M O , £350

Ipswich East Suffolk and Ipswich Hosp —Radiotherapist £600

Keighley and District Victoria Hosp —First and second res M O 's, at rate of £160 and £120 respectively

Kent Education Committee.—Dental surgeon £500

King Edward Memorial Hosp , Ealing —Cas O and deputy res M O at rate of £225

Leeds, St James's Hosp —Res surg O , £350

Leicester City General Hosp —Res M O , at rate of £300

Leigh Infirmary, Lancs.—Jun. H.S , at rate of £150

Lincoln County Hosp —Jun H S , at rate of £150

Liverpool Hosp for Consumption and Diseases of the Chest, Mount Pleasant —Res M O , £150

Liverpool Royal Children's Hosp —Two res H P 's and two res H.S 's for city branch Myrtle Street, each at rate of £100 Also res M O and res surg O for Heswall branch, each at rate of £120

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst to med supt., £225

Liverpool School of Tropical Medicine —Lecturer in parasitology, £700

London County Council.—Part time obstetrician and gynæcologist, £600

London Homœopathic Hosp , Great Ormond Street, W C 1.—H S , at rate of £100

London Jewish Hosp , Stepney Green, E 1 —Hon clin. assts

London Lock Hosp , 283 Harrow Road, W 9 —Surg reg , £100

Maida Vale Hosp for Nervous Diseases W 9 —Hon. radiologist

Manchester, Abergele Sanatorium —Res asst M O , £350

Manchester Crumpsall Hosp —Res surg O , £100

Manchester Royal Children's Hosp , Pendlebury —Res H S , at rate of £100

Manchester Royal Infirmary —Radiologist for X ray diagnostic work, £1000 Also med reg to outpatient dept , at rate of £150

Middlesex County Council —Various appointments £650 to £250

Oldham, Municipal Hosp —Res asst. M O , at rate of £200

Oxford, Exeter College —Staines medical research fellowship, £400

Oxford, Wingfield Morris Orthopædic Hosp —Lord Nuffield scholarship in orthopædic surgery, £200 Also res H.S , at rate of £100 to £120

Pontefract General Infirmary and Hydes Hosp —Sen res surg O , at rate of £175 to £200

Portsmouth St James Hosp for Nervous and Mental Disease, Milton —Locum tenens asst M.O , 7 guineas a week

Preston and County of Lancaster Royal Infirmary —H P , £150

Princess Elizabeth of York Hosp for Children, Shadwell, E 1 — Cas O at rate of £125

Reading, Royal Berkshire Hosp —H S to spec depts , at rate of £150

Romford Isolation Hosp.—Jun asst M O , £250

Royal Chest Hosp , City Road, E C 1 —H.P at rate of £100

Royal College of Physicians, Pall Mall East, S W 1.—Asst Prophit scholar, £250

Royal College of Surgeons of England —Examinership

Royal Naval Medical Service.—Medical officers

St Mary's Hosp for Women and Children, Plaistow, E 13.— Res H.P , at rate of £150

St Thomas's Hosp S.E 1 —Hon director of radiotherapy dept Hon neuro surgeon Also two physicians in charge of outpatients

Salford City —Asst. M O for V D treatment centre, £500

Sheffield Children's Hosp —H P , £100

Shrewsbury Royal Salop Infirmary.—Res H S , at rate of £160

Southampton County —Asst county M O £600

Victoria Hosp for Children, Tite Street, Chelsea S W 3.—H.P and H S at rate of £100 Also cas O , at rate of £200

Walsall General Hosp —Res. surg O £300 Also H S , £150

Walthamstow Borough —Asst obstet. res M O for Maternity Hosp , £200

Warlingham Park Hosp , Surrey —Locum tenens M O., 7 guineas per week

West London Hosp Hammersmith W 6 —Chief clin. asst in X ray (diagnostic) dept , £125

Windsor, King Edward VII Hosp —H S , £120

Woolwich and District War Memorial Hosp , Shooter's Hill, S E 18 —Cas O at rate of £100

Worcester Royal Infirmary —Hon dermatologist

Worthing Hosp.—H S and H P , each at rate of £130

Wrexham and East Denbighshire War Memorial Hosp —Res H.S and res H S to ear nose and throat and ophth depts , each at rate of £150

York County Hosp —H.S to eye ear nose and throat dept., £150

York Dispensary —Res M O £200

The Chief Inspector of Factories announces a vacancy for an Examining Surgeon under the Factories Act, 1937, at Skegness

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* Subject to confirmation

NOTES, COMMENTS, AND ABSTRACTS

PLANT GENETICS AND HUMAN WELFARE[*]

BY R. RUGGLES GATES, D.Sc., LL.D., F.R.S.
PROFESSOR OF BOTANY IN THE UNIVERSITY OF LONDON, AT KING'S COLLEGE

AGRICULTURE, which involved the domestication of plants, began very early, perhaps even 10,000 years ago; and with it began selection to improve the type. Such selection was for long unconscious, but there is evidence that even in the early prehistoric civilisations striking progress had been made in the improvement of various food plants.

The most widely used food plants are now wheat, maize and rice. The cultivation of wheat began so early that it seems possible that the hexaploid bread-wheats were never truly wild species but that they originated from chance hybrids of more primitive forms which are known to have been in cultivation, and some of which are cultivated still. Maize appears to have been moulded by man even more than wheat and nothing like it has ever been found in a wild state. Rice, on the other hand, whose culture probably arose in China, required little alteration by man, and various nearly related wild species are found both in Asia and Africa.

Since the development of genetics during the present century, the production of new types of cultivated plants has gone on apace. This applies not only to widely cultivated species such as the cereals, cotton, tobacco, sugar-cane, sugar-beet and a host of others, but also to many wild plants whose cultivation by man is just beginning. Even forest trees are now receiving the attentions of the plant-breeder, with results that are of great economic importance.

The principles of Mendel, rediscovered in 1900, and the subsequent researches on the structure and division of chromosomes and their relation to hereditary processes, have given us a combined weapon for understanding how new forms of plants have been produced in the past, and therefore how they can be experimentally produced or improved in the future.

SELECTION AND CROSSING OF WHEAT

In all the wheats, as in many other plant genera, the chromosomes run in multiples of a fundamental number. Thus the diploid species of wheat (Triticum) have 14 chromosomes, the tetraploid species 28, and the hexaploid species 42. The diploid condition is undoubtedly the most primitive, and from it the species with higher numbers have been derived through later evolution. Hybridisation has taken a considerable part in this evolution, and Percival has brought evidence to show that the nearly related genus Ægilops is also involved in the ancestry of the hexaploid wheats.

The step from tetraploidy, in the *durum* or hard wheats, to the hexaploid bread-wheats can be pictured as taking place through a cross between a diploid and a tetraploid form, one of which probably contained already one set of Ægilops chromosomes. Such a hybrid would be triploid having three sets of chromosomes, and would be sterile. But we know from various other actual cases that such a hybrid will occasionally double its chromosomes. This produces a form which is fertile because all the chromoso have mates, and it will breed true because the ma chromosomes are alike. We thus have a new spe resulting from a brief course of events which be with an interspecific hybridisation. Several w species are now known to have originated in this w and many more have been produced artificially the same way.

When I visited Russia in 1926 I was shown, at famous plant-breeding station at Saratov on Volga, hybrids between wheat and rye, some of wh have since proved to be of similar character. has only 14 chromosomes, so its hybrids will seven rye chromosomes. The *vulgare* or bre wheat will supply 21 chromosomes to a hyb so that the wheat-rye hybrid will have 28. Su crosses are sterile, but some doubled their chro somes to produce a fertile form with 56 chromosom Such hybrids, in which the chromosome number doubled, are known as amphidiploids. This amp diploid with 56 chromosomes was crossed back the wheat and thus gave rise to a series of for showing extreme variation. One of these had bet grain than the wheat parent, some showed a mark increase in yield, others had the very hardy qualit of the rye, others were very early, and so on. Sim constant hybrids between wheat and rye have b obtained in the United States, Sweden, Germa and Canada.

More recently, still wider crosses have been p duced between wheat and couch-grass, Agropyr These hybrids are perennial like the couch gr Some of them have doubled their chromoso producing a form which the Russians claim is excellent perennial crop for grass or hay as well a grain for fodder. Some of the derivatives fro another similar cross are frost-resistant, some drought-resistant, some annual, and some are to have a greater yield and better quality than wh The flour from this source will have a distinct flavour. Some of these hybrids are also immune rust and smut, the two most serious diseases of wh

These modern intergeneric hybrids, and the selection to produce useful economic types, only been made possible by the application of ge methods combined with the microscopic study of chromosomes. It may be expected that in the such methods will greatly extend the types of ec plants used by man.

However, the main effort in wheat-breeding in numerous laboratories devoted to this subject many countries is confined to the more orth methods of improving the *vulgare* wheat itself producing varieties which have a higher yield, immune to rust and other diseases, or which mat more rapidly and so escape the frosts of north latitudes. In Canada the wheat belt has stead moved northwards for many years, and this has be made possible by the production of varieties wh reach maturity in a shorter period after sowing.

BREEDING FOR IMMUNITY

The great enemy of cereal crops is the group fungi known as rusts. Yellow stem rust of wh (*Puccinia glumarum*) is the active species in th country, and the success of Biffen, in showing that resistance to it behaves as a Mendelian reces in inheritance and (2) in producing resistant variet for the English farmers, is well known. In Cana and Australia the black stem rust, *Puccinia gram* s mainly concerned, and wheat varieties which are artially resistant to it have been produced Never heless there is probably no such thing as complete mmunity, and the problem of breeding for rust-esistance in addition to high yield and other qualities as become very complex

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[*] Abridged from a Chadwick lecture delivered in the Chelsea Physic Garden on June 15.

In Manitoba alone the loss to the wheat crop from tem rust is estimated at £2,050,000 annually during he period from 1916–37 In the eight year period rom 1925–32 the average annual loss from rust in Manitoba and Saskatchewan, two of the three great wheat producing provinces, was 37,000,000 bushels The losses to wheat growers from this source are herefore enormous, and the scientific problem of producing a crop which is resistant to the disease is correspondingly great

The rust fungus completes part of its life cycle on the barberry, so barberry bushes have to be eradicated as far as possible wherever wheat is grown In Canada there is the additional difficulty that the crops are frequently infected by clouds of spores blown by the wind from the somewhat earlier wheat fields farther south in the United States across the border The spores have been found in the air by flying aeroplanes with exposed glass slides coated with Vaseline In this way spores have been shown to be present in the air in summer at an altitude of 2–3 miles Such spores can of course be carried long distances by the wind Some two weeks before an infection appears in the field the spores can be found in the atmosphere Barberry is now practically eradicated from Western Canada, and the summer spores are killed by the low winter temperatures, so that these possible sources of infection are eliminated. Spore showers are also shown to be highly correlated with the occurrence of south winds, so there is no doubt that the spores from wheat crops further south are the source each year of infection of the Canadian wheat fields

VARIATION IN THE ATTACKER

The most difficult aspect of the problem, however, is the multiformity of the fungus itself There are several different varieties of stem rust which affect different cereals, and wheat stem rust alone is known to contain about 150 different races or biotypes These were recognised by their various effects on twelve different varieties of wheat Stakman, of Minnesota, a pioneer in this line of investigation, has recently produced from one cell of the maize smut fungus 162 distinct strains by mutation in artificial culture in a few months

These physiological forms or biotypes of the fungus differ in their ability to produce infection A particular variety of wheat may be highly resistant to several forms of the fungus, partially resistant to some and highly susceptible to others All grades of susceptibility are found to exist Moreover, a wheat crop which is relatively free from rust in one year may succumb to an epidemic if infected by the spores of a different strain of rust in the next year A variety which is resistant in one part of the country or in one year may be susceptible under a different attack, and so the complicated battle between the unwelcome fungus and its resisting host goes on

The nature of the resistance offered by the wheat plant has also been much investigated, as well as the manner of its inheritance It appears that one gametic difference is responsible for immunity to many forms of a particular fungus but not to all, while certain species of wheat may show group immunity to a number of different fungal parasites Vavilov finds that each group of plants has developed its natural immunity mainly in particular geographical regions Thus the wheats from Transcaucasia and the Mediterranean contain the greatest number of resistance genes In oats, he believes that immunity is concentrated in the Mediterranean group and the Pyrenees Pears from Eastern Asia and potatoes from Southern Mexico are resistant to fungal attack. Such forms are regarded as resistant to all the strains of a particular fungus This principle may be important, but it requires verification

Each year a number of physiological forms of the rust are present in the Canadian wheat-fields, but usually one or two forms predominate The form which is rare in one year may be the most common in another, and this as well as weather conditions, which may favour or hinder the fungus, accounts for the fact that the losses in some years are much more severe than in others Thus 1916 and 1923 were disastrous years for the wheat crop

But this is not all, for Dr J H Craigie made the discovery at Winnipeg some years ago that the various strains of the rust can hybridise on the barberry leaves, thus introducing a new sexual phase into the life-history which had not previously been understood. It has been shown that in this way new strains of the fungus can be produced by artificial mixing of the pycnidial nectar on the barberry leaf From one such cross a number of races of the rust were derived, some of which were already common and others new Such new races are, indeed, continually being produced in nature both by hybridisation and by mutation

These facts show how the genetics of the parasites as well as of their hosts must be investigated in order to obtain a relative immunity It also shows the somewhat precarious way in which the superiority of the crop over its enemies is maintained But the problem of the production of resistant varieties of plants is much larger than I have yet indicated. All wild plants have their fungal parasites, and as the various *fungi* differ greatly in their life histories and methods of attack, each case of host-parasite relationship has its own peculiar features. In North America already varieties resistant to certain parasites have been produced not only in wheat and other cereals but in lettuce, cantaloup, tomato, cabbages, sugar beet and sugar cane. Varieties of various legumes have recently been selected for resistance to leaf mosaic, a virus disease

As yet very little has been done in producing immune varieties of horticultural plants, but no doubt this can be accomplished as it has been with agricultural varieties A few years ago a very serious rust disease of *antirrhinum* appeared in this country Its effects are so serious that the only satisfactory solution will be the production of a highly resistant variety

HYBRID VIGOUR

The important principle of hybrid vigour which Darwin observed was first made use of by geneticists in connexion with the modern breeding of maize It was found that F_1 hybrids between different strains of maize are much more vigorous as plants and give a much higher yield than the relatively pure parents So important is this effect that methods have been introduced by which much of the crop each year is produced from seeds of an F_1 cross Extreme inbreeding in maize produces finally dwarfed plants with very small ears A cross between two such strains produces hybrids with extreme vigour, but this vigour rapidly diminishes unless the full hybrid condition is maintained by out crossing.

What selection will do for maize has been strikingly shown by an experiment begun at the University of Illinois in 1902 and carried on until the present time. Dr. Cyril Hopkins selected from a field of maize of one variety, the ears growing respectively highest and lowest on the stalks. Their seeds were sown separately and the resulting strains in six years of further selection showed a mean difference of 34·2 in. in the average height of the ears and an average difference of 34 7 in. in the mean height of the two strains of plants. After the selection had been continued for twenty-five years the two strains were so unlike that it was difficult to believe they had a common origin. The mean height of the ears was in one strain 8·1 in. from the ground and in the other 126·5 in. The low-ear strain was also much earlier and had a higher yield than the high-ear strain. I may remark that this type of experiment raises problems which are still difficult for the geneticist to explain

The principle of hybrid vigour will no doubt receive many other applications in the production of higher yields. A recent striking case has been shown in tomatoes. Twenty-nine crosses were made between different varieties and in twenty-seven of them the hybrids gave an increased yield over both parents. The average increase in yield was 95 per cent, and in a majority of cases the plants were also earlier than either parent. These results of experiments carried out in New Zealand show that in tomatoes hybrid vigour is of great importance, nearly doubling the yield.

THE IMPROVEMENT OF TREES

Nowhere is hybrid vigour more strikingly exemplified than in trees. Burbank produced a hybrid walnut tree of enormous growth many years ago. But large size in trees can also be produced in quite another way—i.e., by a mutational increase in the number of chromosomes The European aspen, *Populus tremula*, normally has $2n = 38$ chromosomes in its cells. Geneticists have recently found in three different localities in Sweden triploid trees with 57 chromosomes. These trees are unusually tall and massive, with larger buds and twigs The leaves are thicker and darker green and they have more than twice the surface of the normal leaves

Forest genetics is evidently a field in which very large future developments can take place. There is equal scope for its application to tropical trees Coconut selection has begun in New Guinea, and in Malaya there are estates of dwarf coconuts, the tree-trunks being so short that the nuts can be picked from the ground.

DRUGS, FODDER AND FRUIT

Cinchona, the source of quinine, was introduced into Indo-China from South America in 1869. Genetical work to improve the strain in the yield of quinine only began in 1917. Many other plants yielding drugs have not yet reached the stage of cultivation, which is always followed sooner or later by attempts to improve the plant as a producer. An interesting example of this kind is the sweet lupin which Erwin Baur produced by selection from a very large number of plants It was free from a bitter alkaloid, which is normally present in lupins, and has become an important fodder plant, valuable for its protein content and because it can be grown on light soils By similar methods Baur obtained a sweet clover (Melilotus) which was free from the bitter alkaloid coumarin.

The production of improved apple varieties can take place more rapidly now that we understand the cell structures and changes underlying the production of new forms of this fruit. The chromosomes of apples, pears, plums, cherries and related forms are in multiples of 17. Some apple varieties, such as Northern Spy, have 34 chromosomes; but many of the best varieties, such as Baldwin, Gravenstein, Blenheim and Bramley's seedling, are triploid, with 51 chromosomes. This means that the pollen is sterile, because the chromosomes are not all in pairs, and the variety will only remain true from cuttings or grafts. In Sweden, Nilsson-Ehle has recently shown that it is relatively easy to obtain new tetraploid forms with 68 chromosomes from the triploid Belle de Boskoop and Blenheim simply by growing large numbers of open-pollinated seeds A few will have this high chromosome number. They are larger with broader leaves and other useful new characters. The crossing together of different tetraploids is a new line of apple fruit development, and, judging from the conditions in other plants, they may be more hardy and make it possible to grow apples in higher latitudes than now. Furthermore, by crossing such tetraploids with various diploids a whole series of new and probably valuable triploid apple varieties can be produced.

Fortunately for man, large-fruited bud-mutations have appeared in many fruits such as grapes, plums, pears, apples, where they are relatively common, and citrus fruits, where they frequently occur. One branch of a tree will bear the new type of fruit, which can be perpetuated by cuttings and grafts from that branch In some cases the cells of the large-fruited branch have doubled their chromosomes, but in others the chromosome number remains unchanged. Seedless varieties of many fruits have had the same origin, as bud-mutations propagated by man.

In Russia, Michurin has produced large numbers of fruit trees of a new type, by resorting to mass selection on a large scale of the seedlings of the genus Actinidia. This genus of plants belongs to the mainly tropical Asiatic family Dilleniaceæ, but one hardy species of Actinidia occurs in the Amur region of Siberia. From it has been produced serviceable fruits for cultivation, while some forms are grown as ornamental shrubs.

That there is still abundant opportunity for bringing new plants into cultivation and improvement by man is shown by the history of the blueberry (*Vaccinium pennsylvanicum*) in America. The fruits of this plant, which are much like our bilberry, but with a distinctive flavour, have been collected in moorlands and eaten by the aborigines from time immemorial, and by Europeans since their advent. One botanist, Dr. F. V. Coville of the American Department of Agriculture, set to work and in thirty years of selection and breeding produced a blueberry of excellent flavour which is as much as an inch in diameter. It is now grown as a prolific crop in areas where no other form of agriculture could succeed.

At the plant-breeding station at Coimbatore in South India, sugar-canes have recently been crossed not only with other species of Saccharum but even apparently with Sorghum and bamboo These crosses appear to be realities and they should give a wide new series of hybrid types, selection from which might produce, for instance, perennial sugar-canes of great growth and of much value.

Strawberries only came into cultivation in Europe in the fourteenth to sixteenth centuries. They long continued to be collected wild, as they are still in many countries The European species of strawberry

rry have 2n = 14 chromosomes and small fruits the modern huge strawberries are descended from crosses between the Virginian and the Chilean species, both of which are octoploid in their chromosome number Philip Miller, who was in charge of the Chelsea Physic Garden for forty eight years (1732-70) and did so much for gardening in England, brought to England from Holland in 1759 some plants which must have had this origin

Our cabbages and their relatives belonging to the genus Brassica have been the subject of many interesting genetic developments in recent years The cabbage itself is clearly descended from the wild *Brassica oleracea* on our coasts Some twenty years ago I found that wild cabbages from Shakespeare's Cliff at Dover (where they are practically the only plants to grow on the bare vertical face of the chalk cliffs), when cultivated from seeds under garden conditions, change their habit greatly and form enormous rosettes of much larger and more fleshy leaves It is not generally recognised that in some plants the immediate effects of cultivation are very great.

Modern genetic work with sugar beets, potatoes and tobacco is also of immense importance

COLCHICINE AND CHROMOSOMES

I wish finally to refer to a recent very effective method of doubling the chromosomes of plants and producing new and larger forms In 1937 Blakeslee and Avery discovered that the alkaloid colchicine, when applied to parts of a plant such as the seeds, roots or other tissues, causes doubling of the chromosomes This method is now being used in many laboratories in different countries A tetraploid ania was produced by dropping a dilute solution colchicine on very young seedlings, and a polyploid l strawberry (*Fragaria vesca*) has been produced this way Tetraploid and octoploid petunias arose seeds soaked in colchicine or seedlings in which plumule was treated with the solution in agar aploid sugar beets have been produced in Sweden their economic value is not yet tested In Russia large number of tetraploid forms of barley and x have been obtained in this way, as well as yploid tobacco, lettuce, rye and other plants

By repeated treatments of onion root tips as many 1000 chromosomes have been obtained in a single l Dilutions up to five parts in a million are ective

It is probably significant that colchicine is chemically ated to the carcinogenic hydrocarbons and the hormones. Another substance, acenaphthene, since been shown to have similar effects High peratures have produced similar results in certain

These recent methods of chromosome doubling, mbined with the method of distant hybridisation which a sterile hybrid can have its chromosomes ubled and so produce a fertile new form, have ly opened a new era in plant genetics. Man now expect to do in a short time what nature taken ages to accomplish The present prospect the plant breeder, given the new tools with which is now equipped, is brighter than ever before should be pointed out, however, that there are ain dangers accompanying plant breeding which require greater vigilance in future than they have ived in the past It is somewhat uncertain how ivated musk lost its odour Many beautiful dern roses, produced by crossing for the loveliness their petals, have inadvertently lost their scent nt genetics in the past has been mainly devoted to increased yield, larger fruits and resistance to disease In the future, such qualities as vitamin content must not be neglected It is known, for instance, that varieties of apples and other fruits differ greatly not only in flavour but in vitamin content It may even become necessary to protect food supplies by ensuring that new varieties of fruits and vegetables shall not be lacking in vitamins, however attractive they may be in other respects

MATERNAL SUPERVISION IN RURAL AMERICA

BETWEEN September, 1929, and June, 1932, a survey[1] was made of maternity cases in the rural county of Cattaraugus, New York, especially from the aspect of the medical and nursing care received by these patients. Of the 312 pregnancies investigated 278 terminated in live-births (5 of which were multiple), 13 in stillbirths, and 21 in abortions

Though almost all the deliveries were attended by a doctor, only about half the women registered with a doctor before the end of the fifth month and a very small proportion made regular prenatal visits The report suggests that either the physicians failed to emphasise the need for regular supervision or they were unable to change the attitude prevalent in rural communities that a doctor is only needed in case of actual illness The amount of prenatal care received was considerably greater among mothers in the highest economic group Age of the mother had less influence than order of pregnancy, primiparæ being much more ready to seek advice than those who had already borne two or three children The service given by public-health nurses consisted almost entirely of educational visits in the homes, there being no mothers' clubs or prenatal clinic. One or more prenatal visits were paid by a nurse to a quarter of the cases, but only 8 per cent were visited in the sixth month or earlier, so there was little opportunity for instruction in the hygiene of pregnancy or for preventive supervision

A surprisingly small amount of postnatal attention seems to have been given a quarter of the women were not seen at all by a doctor after delivery, and another quarter only received one visit Only 37 patients out of the whole series were examined a month or more after delivery. Some postnatal supervision was given by public health nurses to about a third of the mothers, but a high proportion of those who reported some complaint after childbirth had received very little postnatal care or none at all

A large majority of country-dwelling mothers in America have their confinements in their own homes —in the present investigation only 11 per cent were delivered in a hospital and 7 per cent in a maternity home This seems to be a particularly fruitful ground for a full service of home nursing Two experiments[2] in providing nursing assistance in rural homes during delivery have been made in New York state, and as a result the investigator feels that such a service is "an important, if not the most productive, service in securing family and medical coöperation in maternal and child care"

A CATALOGUE OF MEDICAL BOOKS

THE new edition of Lewis's Medical and Scientific Lending Library has now been completed by the issue of part II, being the classified index of subjects (H K Lewis and Co, pp 156 Both parts together 10s) The catalogue is now complete up to the end of December, 1937 A prefatory note contains critic's regret at the delay, but the editor justif it by the very large amount of work involved preparing a catalogue of this kind Another complains that he does not understand the used to describe the size of the books This is in the time-honoured method of st ng the size of the sheet of paper used in the print g press, and the number of foldings after leavin the press. The preface gives an explanatory tabl of what is meant by crown-folio, royal-quarto an demi-octavo, but we are inclined to agree with t critic that these terms, well understood though ey may be in the printing-house, are not suffici tly current among book borrowers for their gui nce. If the size of the book is to be given at all it might be stated in inches or centimetres. The ed or also has a complaint. He deprecates the growing ctice among publishers of giving misleading and fri olous titles to otherwise serious works. As a result anyone who is compiling a catalogue such as this ha to refer to the book itself before he can determine it place in the subject index. The difficulty is familiar ere, and we would suggest to the publisher who, q te naturally, wishes to use an attractive title to sell is book that he should make it clear in a sub-title hat the book is about. We may congratulate Mes s. Lewis on the completion of a laborious and dif cult task. The catalogue is essential to subscribe to the library and will be useful to many others.

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[1] Wiehl, D G, and Berry, K, *Milbank mem Fd* April, 1939, p 1

[2] Sheahan, M W *Ibid* p 113

URIC ACID IN THE SALIVA

A CORRESPOND NT asks for details of the test for salivary uric aci referred to in our Bucharest letter for May 27 (p. 226). The method was described by Dr. Joseph Kalos at a meeting of the medical society of Arad, Tran ylvania. Four reagents are required: (1) dissolve 5 grammes of sodium tungstate in 100 c.cm. of water and add 20 g. of 80 per cent phosphoric acid. Boil the mixture for 1–2 hours and then make up to 250 c.cm. with water. If the solution is at all blue add 3 or 4 drops of bromine water and boil again. This reagent may be kept for years at room temperature. (2) A 20 per cent solution of sodium carbonate. (3) A 20 per cent solution of sodium hydroxide. (4) A N/1000 solution of potassium ferricyanide. The saliva is collected in a small cup, and for this purpose salivation can be usefully stimulated by making the patient suck a thermometer or glass rod.

For the test measure 1 c.cm. of saliva into a test-tube, add 1 c.cm. of reagent (2) and shake. Then add 3 drops of reagents (1) and (3) and run in reagent (4) from a burette until the blue colour turns to an opalescent white. The uric-acid content of the saliva in mg. per 100 c.cm. is then found by multiplying the volume of reagent (4) used by 100 and dividing by 11. Thus if 0·45 c.cm. of ferricyanide is used the result is $0{\cdot}45 \times 100 - 11 = 4{\cdot}0$ mg.

Dr. Kallós says that if the reagents are kept in stock the test can be carried out in under five minutes. The normal content is 2·5–4·0 mg., and a reading of over 4·0 mg per 100 c.cm. indicates excessive uric-acid production.

NEW PREPARATIONS

FLAVOGEL is a homogeneous preparation of acriflavine (1 in 1000) in a water-soluble jelly base. The antiseptic, it is claimed, is brought into intimate contact with the tissues, and its maximum effect continues until the dressing is removed. The jelly base is considered economical because it discourages absorption of acriflavine by the dressing itself, and it also enables the dressing to be removed without harming granulation tissue. Flavogel is recom- lu mended as a dressing for wounds (infected or a uninfected), as a protective after incision of septic bitte sions, for the local treatment of septic conditions and h the skin, and as an antiseptic lubricant. It is for its pared in collapsible tubes by Glaxo Laboratories on light Greenford, Middlesex.

OL LAXATIVES.—Dimol is an antiseptic used a sweet ternally and externally. Its active principle is bitter alka methoxyphenol. with tri- and tetra-methyl- The prod nd the chief advantages claimed for it as an take place m ntiseptic ar that its potency is high, that

lic Library

it is n oxic even in very large oses, that it absorb d, and that it is not broken down in The mak rs, Dimol Laboratories Ltd. (34, Hill, London, E.C.4), now offer Dimol prepared from high viscosity liquid finest quality, emulsified with Dimol a quantity of pure vegetable oil." They Dimol Compound Syrup of Figs, a mild particularly designed for women and children suggest that intestinal toxæmia or mentation can be conveniently corrected associated antiseptic and laxative action new preparations.

A new packing for Cycliton is ROCHE PRODUCTS LTD. (Welwyn Garden The drug is described as a circulatory and stimulant acting through the central nervous and it has hitherto been sold only in ampoules solutions and tablets to be taken by mouth. now available in rubber-capped phials taining 15 c.cm. of sterile solution for

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ADAMANTINOMA AND MULTILOCULAR C H. T. Roper-Hall, writing from 43A, Calth Five Ways, Birmingham, 15, says that he grateful for "cases, histories, radiographs, references to adamantinoma and mu of the jaws and elsewhere. Everything cared for and safely returned."

LEFT VENTRICULAR FAILURE: C Dr. Evan Bedford wishes to correct a sentence lecture as published in our issue of June 10. second column of p. 1307 it should be "McMichael has shown that the normal systemic output that follows change from to the horizontal posture is preserved in le failure only by a further rise in pulmonary The reference to McMichael's work in the graphy should be replaced by the McMichael, J. (1938) *Trans. med.-chir.* p. 161 (*Edinb. med. J.* August).

Births, Marriages and

BIRTHS

ASKEY.—On June 15, at the nursing-home, 53, S W.17, the wife of Dr S G Askey—a son.

BOOTH.—On June 7, at Barnton, Northwich, the wife of Dr Eric G Frank Booth—a daughter

OASTLER.—On June 16, Glasgow—a son.

OFFICER.—On June 4, at the British Military Hospital, India, the wife of Major W J Officer, R.A M.C—a

MARRIAGES

MATHESON—REID.—On June 14, at the Parish Church, cambe, A Cameron Matheson, M B, to

NIGHTINGALE—LANCASHIRE.—On June 10, at Innocents' Church, Fallowfield, Roland Nightingale, to Mary Sidney Lancashire

RUSSELL—CAMPBELL.—On June 15, at St Giles Edinburgh, Charles Scott Russell, F R C S.E, to Campbell.

DEATHS

BAKER.—On June [illegible], at Camberley, Sir John Baker Aberd aged 77

BEWLEY.—On June 18, at Alverstoke, Colonel Alfred Bewley, C.M G, L.R.C.P I, late A M S, aged 73.

COLE.—On May 21, at 61, Connaught Avenue, Plymouth, William Edward Cole, M.A., M B Camb, D P

COLLINS.—On June 18, at Aldeburgh, Henry Abdy M R.C S, L S.A., in his 89th year

DAVIES.—On June 13, at Kingsclere, James David O B E, M.R C.S., formerly of Ryde, I O W., in his year

KEMP.—On June 16, John Harold Kemp, M B. Woodchester, Horsham (sometime of Wellington, Zealand

LUNAN.—On June 15, at Blairgowrie, Charles Smith M B, C M. Edin, aged 85.

NEALE.—On June 16, William Henry Neale, M.D. of Loudoun Road, N W.8.

RIGBY.—On June 17, in London, John Charles Rigby, O.B E, M.B, Camb, late of Bildeston, aged 68

N B.—A fee of 7s. 6d. is charged for the announcement of Marriages, and Deaths.